Use of Sulfadoxine-Pyrimethamine and Amodiaquine Combination in Richard Toll and Touba Districts, Senegal, May 2004: Assessment Report

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Key Words

malaria, Senegal, sulfadoxine-pyrimethamine, amodiaquine

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ACRONYMS

ACT	artemisinin-based combination treatment
AQ	amodiaquine
ASC	Agent de Santé Communautaire (community health worker)
ATM	artemether
BCC	behavior change communication
CQ	chloroquine
EML	Essential Medicines List
HC	Health Center
IEC	information, education, and communication
IPT	intermittent preventive treatment
MCD	Médecin Chef du District (District Medical Officer)
MCR	Médecin Chef du Région (Regional Medical Officer)
PCD	Président du Comité de District (President of the district health committee)
PMM	Pharmaceutical Management for Malaria [tool]
PNLP	Programme Nationale de Lutte contre le Paludisme (National Malaria Control Program)
PSR	Poste de Santé Rurale (Rural Health Post)
PSU	Poste de Santé Urbain (Urban Health Post)
Qu	quinine
RPM Plus	Rational Pharmaceutical Management Plus [Program]
RT	Richard Toll [District]
SP	sulfadoxine-pyrimethamine
STG	standard treatment guideline
USD	U.S. dollar
XOF	Communauté financière africain franc, Banque Centrale des états de l'Afrique de l'ouest

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EXECUTIVE SUMMARY

In July 2003, Senegal changed its national antimalarial treatment policy from using chloroquine (CQ) to using a combination of sulfadoxine-pyrimethamine (SP) and amodiaquine (AQ) because of data from the country's seven sentinel surveillance sites that suggested an increasing resistance to CQ. This new nationwide policy was to be implemented immediately. Before this change, anecdotal evidence was available to suggest that the districts of Richard Toll and Touba, which both have sentinel surveillance sites, had earlier implemented the change to SP/AQ for the same reason. However, the actual date of the implementation of the SP/AQ policy in the two districts was not available. The present study was conducted in those two districts to assess their implementation of the SP/AQ policy and to identify lessons learned the can be used in the national scale-up of the policy. Because Senegal is currently planning to change its national policy from the SP/AQ combination to an artemisinin-based combination treatment (ACT), the results of this study are also expected to inform the implementation of the ACT policy.

The findings of the assessment suggest that no formal plan existed to guide the implementation of the SP/AQ policy in Richard Toll (RT) and Touba Districts or to communicate the new strategy to health care providers. Of the four key decision makers interviewed, only one reported that training sessions had been organized to train providers on the new policy, and that training was held in the hospitals and not in the health centers or health posts. Of the prescribers interviewed, only 4 of 20 reported that they had received any training on malaria from May 2003 to April 2004. Only 10 of the 20 prescribers interviewed reported that they had Standard Treatment Guidelines (STGs) in their health facility, and only 12 of 20 reported that they followed the STGs when managing cases of malaria.

The uptake of the SP/AQ policy differed in the two districts. Although the data suggested that providers were prescribing SP/AQ in Touba District as early as April 2003, the uptake of the policy was very slow, and by April 2004, only 47 percent of the prescriptions to patients with malaria were for this combination. CQ was still being prescribed to some of the patients as of May 2004. In Richard Toll District, there was no evidence of SP/AQ prescribing before November 2003, but the uptake of the policy in the health facilities in this district was greater. By April 2004, 53 percent of the prescriptions to patients with malaria were the SP/AQ combination.

In both districts, the increase in the prescriptions for SP/AQ appeared to occur when the availability of the SP and AQ in the health facilities improved. In RT District, both SP and AQ were available in most of the health facilities beginning November 2003, while in Touba they were available in most health facilities beginning October 2003. A plan for the phasing out of CQ from the health facilities does not appear to have been developed, because large stocks of CQ were still available at the time of the assessment in May 2004.

Most of the patients interviewed, including patients who had just received SP/AQ combination treatment, reported that they had not heard of the combination treatment. In fact, most of the patients did not know the name of the antimalarial they had received or what condition the medicine treated. This lack of knowledge may affect their use of the medicines as prescribed.

The findings of the assessment allow some recommendations for the implementation of the ACT policy to be made. It may be prudent to develop a formal implementation plan for the ACT policy that includes the guidelines and the timelines for the phase-in of the policy in each region of the country. All the key decision makers in these regions need to be informed of this plan in preparation for the implementation. The implementation plan should also include plans for revising the STGs and for orienting and training all health providers on the new policy to improve their compliance with the treatment guidelines.

Inventory management practices need to be reviewed to improve the availability of the new required medicines and the phase-out of the old medicines. In addition, the implementation of the ACT policy needs to be tailored to match the availability of these new medicines in the health facilities. Communication strategies and materials targeted at the members of the community need to be developed and sessions held to promote increased patient awareness of the recommended treatment for malaria and to encourage appropriate use of the medicines by the patients.

BACKGROUND

Introduction

Malaria is endemic in Senegal. It represents 35 percent of the outpatient consultations at public health facilities in the country[1] and is the main cause of morbidity and mortality, particularly in children under five years of age. The malaria control efforts in the country are managed by the National Malaria Control Program (Programme Nationale de Lutte contre le Paludisme, or PNLP). The main objective of the malaria control efforts is to reduce the morbidity and mortality attributable to malaria, particularly in children under five and in pregnant women. Specifically, in the period from 2001 to 2005 the malaria control efforts seek to—[2]

- Reduce by 30 percent the mortality attributable to malaria
- Reduce by 20 percent the morbidity attributable to malaria
- Reduce by 50 percent the cases of complicated malaria in pregnant women

To achieve these objectives, the strategies adopted by the PNLP include—

- Improving access to appropriate, effective antimalarial medicines when required at the health facilities and in the community

- Improving access to insecticide-treated nets and other insecticide-treated materials used to prevent malaria

Access to antimalarial medicines depends in part on their availability in the health facilities and on their cost. Senegal follows the recommendations of the Bamako Initiative, and therefore medical services in public health facilities are provided at a fee. Patients are required to pay a consultation fee and are also required to pay a separate fee for the purchase of the medicines that are prescribed. The fee for each medicine is set by the government for the different levels of the health care system.

As in most African countries, CQ was the recommended first-line treatment for malaria in Senegal for several years. Active surveillance of the CQ resistance patterns at the seven sentinel surveillance sites in the country began in 1995. By 2002, six of the seven sites had documented CQ resistance levels greater than 25 percent of the malaria cases. This documented increase in resistance was the main reason for the change in the national malaria treatment policy.

In 2003, Senegal decided to change its national treatment policy for uncomplicated malaria from CQ monotherapy to a combination of SP and AQ. The change was formally announced at a national consensus meeting that was held in Dakar, Senegal, June 25–26, 2003. The PNLP

[1] PNLP, République du Sénégal. June 2003. Atelier National de Consensus sur la Politique de Traitement Antipaludique au Sénégal (National Consensus Workshop on Malaria Treatment Policy in Senegal).
[2] PNLP, République du Sénégal. June 2003. Atelier National de Consensus sur la Politique de Traitement Antipaludique au Sénégal.

planned an immediate implementation of this new policy because of the feeling at the time that the country was already primed for change. The SP/AQ combination was to be a transition treatment policy while a decision was made on which ACT to adopt. The transition to an ACT is anticipated to occur in 2005.

Components of the Framework for Implementation of a New Treatment Policy

The successful implementation of a new treatment policy requires that several measures be taken. A framework for the implementation that includes these measures has been developed and included in the 2004 *Changing Malaria Treatment Policy to Artemisinin-Based Combinations: An Implementation Guide* published by the Rational Pharmaceutical Management Plus (RPM Plus) Program, Management Sciences for Health. This framework is summarized in Figure 1. Ideally, the implementation of a new policy requires that an implementation plan and timeline that include the components listed in Figure 1 be developed. It is unclear if such a plan was developed for the implementation of the SP/AQ policy in Senegal.

1. **Technical considerations**
   - Revision of drug regulation
   - Development/review of the Essential Medicines List (EML), Standard Treatment Guidelines, and/or other relevant guideline document and behavior change communication (BCC) materials for malaria
     - Dissemination of the revised STGs and/or other relevant guideline document and BCC materials
     - Training and supervision of health workers consistent with the new guidelines
     - Information, education, and communication (IEC) targeting the community
2. **Operational considerations**
   - Management of stock of antimalarials currently in use
     - Development of a phase-out plan
   - Management of supply of antimalarials for use in new treatment policy
     - Forecasting of demand and quantification
     - Procurement
     - Distribution
     - Inventory management
   - Review of quality assurance mechanisms
     - Pharmacovigilance
     - Product quality surveillance
3. **Monitoring and evaluation**

Source: Rational Pharmaceutical Mangement Plus Program, in collaboration with the Global Fund to Fight AIDS, Tuberculosis and Malaria and the Roll Back Malaria Partnership. *2005. Changing Malaria Treatment Policy to Artemisinin-Based Combinations: An Implementation Guide.* Submitted to the U.S. Agency for International Development by the Rational Pharmaceutical Management Plus Program. Arlington, VA: Management Sciences for Health.

Figure 1. Key components in framework for implementing antimalarial treatment policy

Rationale for the Assessment

At the time of the consensus meeting in late June 2003, anecdotal evidence indicated that the districts of Touba in Diourbel Region and Richard Toll in St. Louis Region had already begun implementing the new treatment policy in the preceding months. Two of the sentinel sites that were used to monitor the efficacy of CQ and other antimalarials in the country were located in those two districts, and the evidence of the increasing resistance to CQ had resulted in the decision by the District Medical Officer (Médecin Chef du District, or MCD) of each of these two districts to make the change. The PNLP was interested in assessing the implementation of the SP/AQ treatment policy in these early-adopter districts and using the lessons learned in scaling up the implementation of the policy. As a result, the PNLP, with technical assistance from RPM Plus, conducted this assessment May 24–28, 2004.

Objectives of the Assessment

This assessment was a health facility–based descriptive study designed to—

1. Assess how the new malaria treatment policy was being implemented in these early-adopter districts and apply the lessons learned to the rest of the country. Given the impending change in the malaria policy to ACT, the analysis of this assessment has been expanded to apply the lessons learned from this assessment and the introduction of the SP/AQ combination to the implementation of the ACT policy.

2. Identify ways to improve the compliance of providers and patients with the recommended treatment policy and guidelines.

The study seeks to answer are the following key questions—

- Are SP and AQ available consistently and in sufficient quantities in the health facilities should patients need to purchase them?
    - Provides information relating to the operational components of the implementation framework in Figure 1
- Are the providers prescribing and dispensing the SP/AQ combination consistent with the available treatment guidelines?
    - Provides information relating to the technical components of the implementation framework in Figure 1
- Is adequate information and counseling given to the patients to ensure their understanding and eventual compliance with the SP/AQ combination?
    - Provides information relating to the technical components of the implementation framework in Figure 1
- Are there any barriers to effective implementation of the new recommended treatments?

Study Methodology

Sampling of Health Facilities

All functional health centers in each of the two districts were included in the sample. The health posts were stratified for their geographic location—that is, whether urban or rural—and purposively sampled based on this stratification in consultation with the MCD. The final sample represented approximately 30 percent of the health facilities in the two districts (Table 1). The sample included 5 of the 13 functional urban health facilities and 5 of the 21 functional rural health facilities.

Table 1. Planned Sample of the Health Facilities in Each District

District		Urban Health Center	Urban Health Post	Rural Health Post	Total Number of Facilities
Richard Toll (St. Louis)	*Number in district*	1	3	13	17
	Sample size	**1**	**1**	**3**	**5**
Touba (Diourbel)	*Number in district*	2[3]	8	8	18
	Sample size	**1**	**2**	**2**	**5**
Total (2 districts)	***Sample size***	**2**	**3**	**5**	**10**

Five health facilities in each of the two districts were included in the final sample, for a total of 10 facilities. The combination of urban and rural health posts included in the final sample in each district was designed to be representative of the actual distribution of the health posts in these districts. The sample in RT District had more rural health facilities while the sample in Touba District had more urban health facilities, which is consistent with the distribution of the health facilities in each of those districts.

Three health huts in the areas of the Gnith Rural Health Post (Poste de Santé Rurale, or PSR), Rosso PSR, and Ndindi PSR were also included in the sample; however, limited information was available from these health huts because they keep few records and the data that were collected were not included in the final analyses.

The health facilities included in the sample are listed in Table 2.

[3] One health center in Touba District, the Darou Khoudoss Health Center, was nonfunctional and therefore was not included in the final sample.

Table 2. Health Facilities Included in Final Sample

District	Health Center (HC)	Urban Health Post (PSU)	Rural Health Post (PSR)
Richard Toll (St. Louis)	Richard-Toll HC	Taouey PSU	Rosso PSR Gnith PSR Ronkh PSR
Touba (Diourbel)	Ndamatou HC	Keur Niang PSU Darou Khoudoss PSU	Darou Marnane PSR Ndindi PSR

Data Collection Methods

Nine[4] data collection instruments were used in this assessment (Table 3). These instruments were developed by RPM Plus, including several instruments adapted from the Pharmaceutical Management for Malaria (PMM) and the Community Drug Management for Malaria tools that had been previously developed by RPM Plus. These indicator-based tools have been tested and used in other assessments. The instruments were further adapted in consultation with the PNLP for use in Senegal.

Interviews

- Semi-structured interviews were carried out with key decision makers: the Regional Medical Officer (Médecin Chef de Région, or MCR), the MCD, and the President of the district health committee (Président du Comité de District, or PCD). These interviews were designed to provide an understanding of the recommended practices with respect to the treatment of malaria in each region.

- Structured interviews were carried out with prescribers at each of the health facilities sampled to gain a better understanding of their knowledge and practices with respect to the prescribing of the recommended medicines for the case management of malaria at the health facilities.

- Structured interviews were carried out with the dispensers at each of the health facilities to gain a better understanding of their knowledge and practices with respect to the dispensing of the recommended medicines for the case management of malaria.

- Structured exit interviews were carried out with patients or their caretakers to determine their understanding of how to use the medicines prescribed and dispensed. At least 10 patients in each health center and 5 patients in each health post were interviewed (these were the same patients who were sampled for the observations described below). These numbers were selected based on the expected number of malaria cases that would be seen each day at each of these facilities. The actual number of interviews done is listed in Table 3.

[4] The first three interviews listed in Table 3 were conducted using the same instrument—the Key Stakeholder Interview form. However, some of the questions in the form were omitted in the interview with the PCD, as was discussed and agreed during the pretest of the instruments.

Table 3. Data Collection Instruments and Planned Sample Size for Each Instrument

Instruments	Sample Size					
	Planned			Actual		
	RT	Touba	Total	RT	Touba	Total
MCD Interview	1	1	2	1	1	2
MCR Interview	1	1	2	1	1	2
PCD Interview	1	1	2	1	1	2
Patient-Provider Observation	30	30	60	25	31	56
Patient-Dispenser Observation	30	30	60	21	23	44
Patient Exit Interview	30	30	60	21	28	49
Prescriber Interview	8	9	17	8	12	20
Dispenser Interview	5	5	10	7	8	15
Medical Records Review Form	360	360	720	353	366	719
Medical Stores Inventory Form	5	5	10	5	6	11
Stock-out Data Form	5	5	10	5	5	10

Observations

- Observations were carried out of the interaction between the patients suspected of having malaria and the prescriber to assess the treatments being prescribed and the quality of the communication of these treatments to the patients. The planned sampled required that the interactions of the prescriber with at least 10 patients in each health center and 5 patients in each health post were to be observed for a total observation of 30 interactions in each district. (These were the same patients whose interactions with dispensers were later observed and who were also interviewed on exiting the health facility.) In RT District, only 25 interactions were observed. The data collectors were unable to observe the targeted number of interactions because of the limited number of patients seen at two of the health posts—Gnith PSR and Ronkh PSR. The data collection date did not coincide with the market day, which is when most patients come to the health post, hence the lack of patients. In Touba District, 31 patient-prescriber interactions were observed. The actual number of observations done is listed in Table 3.

- Observations were carried out of the interactions between the patients diagnosed with malaria and the dispensers to assess what medications were being given and the quality of counseling accompanying the dispensing of those medications. The interactions of the dispenser with at least 10 patients in each health center and 5 patients in each health post were to be observed. (These were the same patients whose interactions with prescribers had just been observed and who were later interviewed on exiting the health facility.) Not all the patients filled their prescriptions at the health facility dispensary before exiting; therefore, only 44 of the 56 patients targeted were observed interacting with the dispensers. The actual number of observations done is listed in Table 3.

Review of Medical Records

A retrospective analysis of patient records was carried out to analyze the medicines that had been prescribed to patients diagnosed with malaria in the preceding 12 months. In each facility, all of the malaria cases for each month were reviewed and classified into two categories—adult (15 years of age or more) or child (0 to 14 years of age). Three cases from each category were randomly sampled.[5] The actual number of records reviewed is listed in Table 3.

Inventory

A review of the inventory records and a physical inventory were done to assess the availability of SP, AQ, and other antimalarials in the health facilities and their affiliated district medical stores for the preceding 12-month period and at the time of the assessment.

Development of Medicines Tracer List

The tracer list to be used in assessing the availability of the antimalarials was developed by the PNLP in consultation with RPM Plus. The tracer list consisted of the antimalarial medicines included in both the old and the new national malaria treatment guidelines in the strengths that are expected to be available in the health facilities to be surveyed.

Table 4. Tracer List

Product	Abbreviation
Sulfadoxine-pyrimethamine 500 mg/25 mg tablet	SP
Amodiaquine 200 mg tablet	AQ
Amodiaquine oral suspension	AQ syr
Chloroquine phosphate 150 mg tablet	CQ
Chloroquine syrup 50 mg/5 ml (10 mg/ml)	CQ syr
Quinine 200 mg injectable	Qu 200 inj
Quinine 400 mg injectable	Qu 400 inj
Artemether-lumefantrine (Coartem) 20 mg/120 mg tab	ATM-LUM

Data Collection

Twelve data collectors were recruited to conduct this assessment. The recruitment was done in collaboration with the PNLP, and all the data collectors were drawn from various sectors of the Ministry of Health (see Annex 1 for a complete list of the data collectors).

A three-day training session for the data collectors was conducted at the BASICS II offices in Dakar, Senegal, May 17–19, 2004. Pretesting of the data collection instruments was carried out

[5] The tools used for the review of the medical records were adapted from the PMM tool, and this sampling methodology is recommended in the tool.

at the Ouakam Health Center in Dakar on the third day of the training. On the basis of the results of this pretest, the data collection instruments were modified and finalized.

Data collection in Touba and RT Districts took place May 24–28, 2004. A team of six data collectors was assigned to each district, one of each six-person team was selected as the study coordinator for the team. Each data collector was assigned specific tasks on the team. The study coordinator was responsible for conducting interviews with the key decision makers and for managing the data collection activities of the team.

Limitations

Limitations of the Study Design

This study was limited to the use of fairly structured instruments to collect the required data in health facilities. The study was intended to identify problems and practices related to the availability and use of the antimalarial medicines and was not intended to collect data that would provide an in-depth understanding of the factors that may motivate some of the behaviors and practices observed, nor to provide an understanding of what factors may be creating a barrier to the adoption of desired behaviors and practices.

Limitations Identified during the Data Collection Exercise

The data collectors faced some challenges that affected their data collection activities and the quality of some of the data collected, including the following—

- Access to medical personnel. The week of the data collection coincided with training workshops for some of the medical personnel in charge of the health facilities, so they were not available to be interviewed at the time their health facility was visited. Where possible, the data collectors returned later in the week to conduct the interviews.

- Low patient turnout. Visits to the health posts did not always coincide with their busiest day (market days), so numbers of malaria cases were insufficient for the observations and interviews. This low turnout was most problematic at the Taouey PSU, where the observation of the patient-provider interactions and patient interviews had to be conducted at the neighboring Gallo Malick health post to obtain a sufficient number of malaria cases.

- Poor record keeping

    - Patient records were incomplete in most cases, and therefore the types of data that could be collected from them were limited. Some of the records did not include the diagnosis or the names of the prescribed medications; these records were excluded from the sampling framework. Where the medicine prescribed was listed, most of the additional information was missing, including the generic names of the prescribed medicines, the required dosages, and the duration of treatment. The patient profiles included in the records were also limited. The age

of the patient was not always included, and in several instances only an age range (0–5, 15–49) was given. In most cases, the data collectors also had to number the records themselves in order to use them.

- Stock cards were missing in many of the facilities and were poorly maintained where they existed, which made collecting all the required information difficult. Other sources of data were used where possible, such as the order and reception forms, as well as verbal information from the staff members. Physical inventories were also used in most of the facilities to collect the stock availability data.

- Daily dispensing ledgers, ideally, should be filled in each day. If the medicine was dispensed, then the total quantity dispensed for that day is entered. If the medicine was available but not sold that day, a "0" would be entered. Stock-outs are to be noted on the ledgers using blacked-out or hatched boxes. However, in reviewing the ledgers, the data collectors found that in several instances stock-outs were also recorded as "0" in the ledgers, making it difficult to discern the stock-out data from these ledgers. The data collectors opted to use the order vouchers and the ledgers of the medicines issued by patient to determine the stock-out periods.

AVAILABILITY OF REQUIRED ANTIMALARIALS

The consistent availability of antimalarials in the health facilities at an affordable price is an important aspect in ensuring that a patient will have access to these medicines. The availability of any medicine at the end-user level is the result of the quantification, procurement, distribution, and inventory management practices at the national, regional, and health facility levels. This assessment focused on the availability of the antimalarials at the end-user levels; therefore a more in-depth assessment would be required to diagnose the cause(s) of any problems identified.

During this assessment, data on the availability and price of the antimalarial medicines included in the tracer list were collected and analyzed. The antimalarials in the tracer list were limited to only those that are included in the STGs under both the old treatment policy and the new treatment policy for use at primary health facilities. Antimalarials included in the STGs should always be available at the health facilities included in the study sample.

Information on stock availability was collected by using the Medical Stores Inventory Form and the Stock-out Data Form and by interviewing the dispensers at the health facilities. The Stock-out Data Form was used to ascertain the number of days with stock-outs of the malaria medicines in the tracer list in each health facility between May 2003 and April 2004 (the 12 months preceding the assessment). The time period covers the 2 months before the formal change in the national policy was announced (July 2003) and the 10 months after the formal change in the national policy was announced. This form therefore provides a historical perspective of the availability of the antimalarials included in the tracer list. By design, this form did not provide information on the quantity of the antimalarials that was available over the 12-month period. The Medical Stores Inventory Form was designed to collect information on the quantities of the malaria medicines available at the time of the assessment.

Inventory Management Methods

Manual ledgers and stock record cards are the main inventory management record-keeping systems used in the health facilities (Table 5). As discussed earlier, several problems were observed with the maintenance of these records, and not all of them could be relied on to provide the required data. In two of the three health facilities that used stock record cards, a physical count was done to collect the availability data that could not be obtained from the incomplete record cards (Table 5). Only one health facility included in the sample, a health post in RT District, did not use any inventory management system, and there a physical inventory was done to collect the availability data.

Table 5. Inventory Management Systems

Inventory Control System	Existing (n^a = 11)	Used in Survey (n^a = 11)
Computerized ledger	0	0
Manual ledger	7	7
Stock record cards	3	1
None	1	0
Physical count	0	3

[a] The HC in Touba has two independent drug depots—the health facility depot (which supplies the health facility) and the district depot (which supplies the whole district)—that are opened alternately (changing every 48 hours). Stock-out data were collected from only the district depot.

Inventory of Antimalarials on Tracer List

Availability of SP and AQ Tablets

The review of the stock-out data covered the 12-month period (May 2003–April 2004) that includes the 2-month period before the formal change in malaria treatment policy in July 2003 and the 10 months after the formal change in the treatment policy. Before this change, SP was recommended as a second-line treatment for malaria and AQ was not part of the guidelines; therefore, those medicines are not expected to be widely available in the primary health facilities such as health centers and health posts.

The two districts included in this sample, however, were supposed to have started implementing the SP/AQ policy in the months preceding the official change in the national policy. Thus, it was expected that SP and AQ should have been available at these health facilities, but that assumption was not supported by the data from the assessment.

In only one of the five health facilities surveyed in Touba District were both SP and AQ available continuously over the 12-month period (Table 6). SP was available in all the surveyed health facilities in the district from July 2003, with limited stock-outs in a few health facilities after that date. From October 2003, AQ was available in all the surveyed health facilities in the district, with limited stock-outs in a few health facilities after that (Figure 2). Therefore, in these facilities, it was not until October 2003 that the patients would have been able to purchase the SP/AQ combination from the health facility dispensary. Before that date, patients would have had to purchase at least one of the medicines elsewhere if they received a prescription for the combination.

Table 6. Number of Health Facilities with No Stock-Outs, May 2003–April 2004

District	SP Tab	AQ 200 Tab	AQ Syr	CQ 150 Tab	CQ Syr	Qu 200 Inj	Qu 400 Inj
RT *(n=5)*	1	0	0	2	0	3	4
Touba *(n=5)*	1	1	1	4	1	2	4
All	2	1	1	6	1	5	8

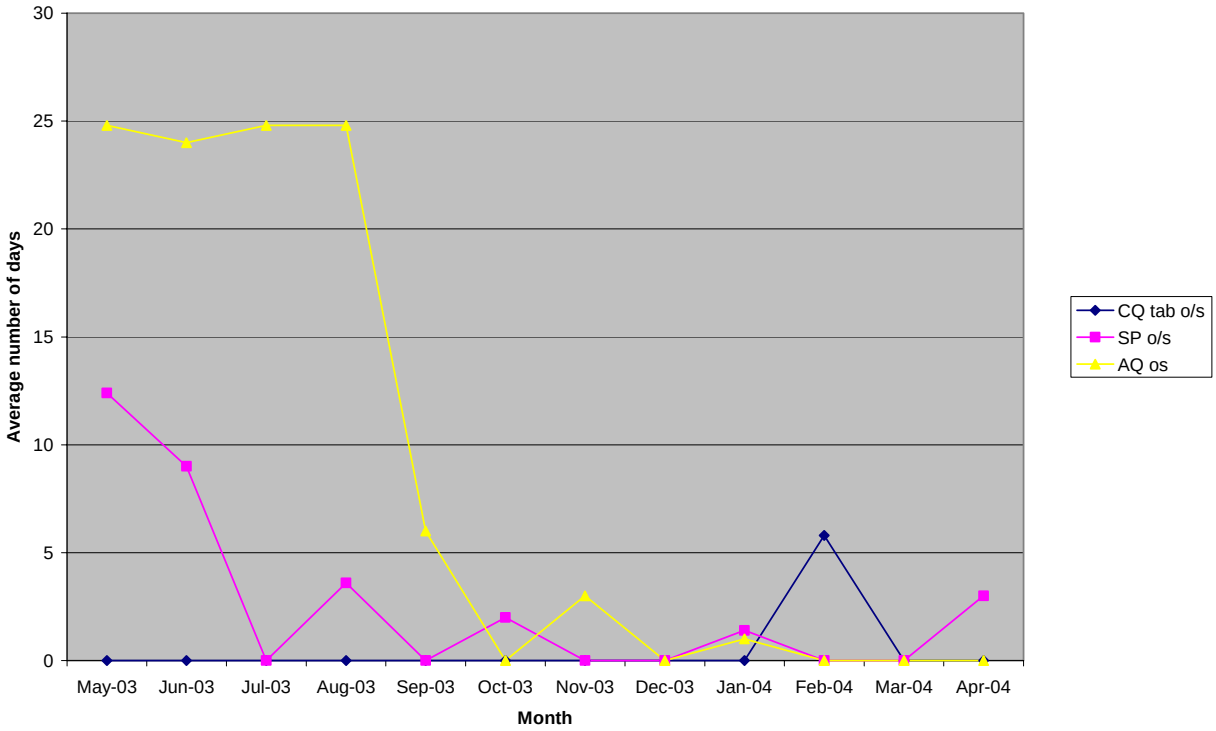


Figure 2. Stock-outs of SP, AQ, and CQ in the health facilities in Touba District

In Richard Toll District, in only one of the five health facilities was SP consistently available throughout the year (Table 6). AQ was not available in any of the same health facilities until November 2003, and it was not until March 2004 that the AQ was consistently available in all the health facilities surveyed (Figure 3). Therefore, it was not until March 2004 that both SP and AQ were consistently available in all the health facilities surveyed in this district.

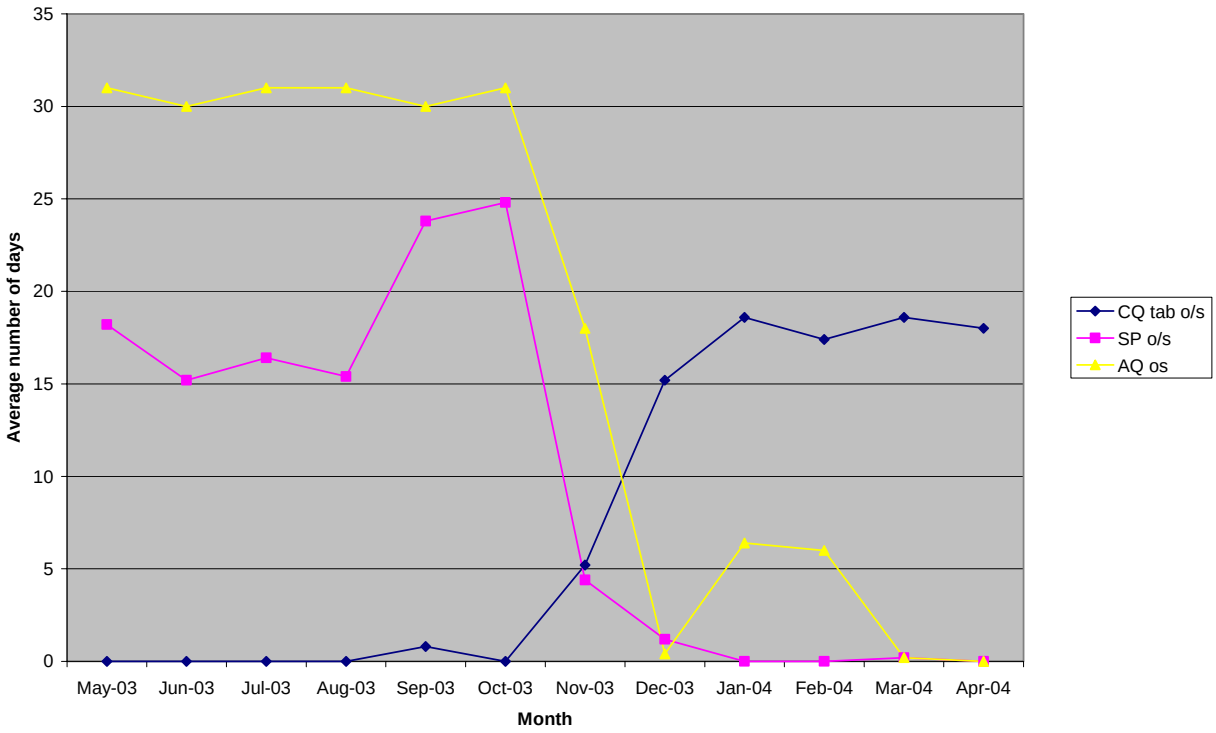


Figure 3. Stock-outs of SP, AQ, and CQ in health facilities in Richard Toll District

The inventory records for SP at the time of the assessment showed that SP was available in all the health facilities in the two districts[6] (Table 7). The quantity of SP available ranged from 15 to 2,877 tablets (equivalent to 5 to 959 adult doses of SP[7]), with an average of 583 tablets (194 adult doses). AQ was out of stock in one health facility in RT District but was available in all the health facilities in Touba. The quantity of AQ available ranged from 0 to 15,000 tablets (0–1,666 adult doses[8]), with an average of 2,583 tablets (287 adult doses).

The larger quantities of SP and AQ were found at the depots affiliated with the health centers in each of the two districts, which also function as the district depots and supply all the health posts in the district. Unfortunately, because this assessment did not collect attendance data for the health facilities, it is not possible to assess how many months of projected need for SP and AQ these quantities represent.

[6] This SP was also available for use for intermittent preventive treatment for the prevention of malaria during pregnancy.
[7] One adult dose of SP = 3 tablets.
[8] One adult dose of AQ = 9 tablets.

Table 7. Physical Inventory of Antimalarials Included in the Tracer List

Medicine		SP Tab	AQ 200 Tab	AQ Syr	CQ 150 Tab	CQ Syr	Qu 200 Inj	Qu 400 Inj
Counting unit		**tablet**	**tablet**	**ml**	**tablet**	**ml**	**ml**	**ml**
RT District (n=5)	**minimum**	57	0	0	0	0	0	144
	maximum	1,500	5,120	1,680	650	0	1,884	3,300
	average	422	1,642	600	176	0	1,087	1,137
Touba District (n=6)	**minimum**	15	80	720	370	0	0	0
	maximum	2,877	15,000	6,480	81,000	49,320	320	23,200
	average	717	3,368	2,730	17,629	9,350	160	4,199
Both districts	**minimum**	15	0	0	0	0	0	0
	maximum	2,877	15,000	6,480	81,000	49,320	1,884	23,200
	average	583	2,583	1,762	9,696	5,100	822	2,807

Availability of AQ Suspension

As will be discussed in the next section, several health service providers surveyed prefer to prescribe suspensions instead of tablets to infants and young children for the case management of malaria. An analysis of the availability of AQ suspension in the health facilities in Touba District found that it was not until March 2004 that this suspension was available in all the health facilities surveyed (Figure 4). In Richard Toll District, AQ suspension was available slightly earlier, in January 2004, in the health facilities surveyed (Figure 5).

The inventory at the time of the assessment found that AQ suspension was out of stock in only one health facility in RT District and was available in all the health facilities in Touba (Table 7). The quantity of AQ suspension found in the health facilities in RT District ranged from 0 to 1,680 ml (0–28 doses[9]), with an average of 600 ml (6 doses). The quantity found in the health facilities in Touba ranged from 720 to 6,480 ml (12–108 doses), with an average of 2,730 ml (45 doses).

[9] AQ suspension is dispensed in 60 ml bottles, which is considered here as the equivalent of one dose.

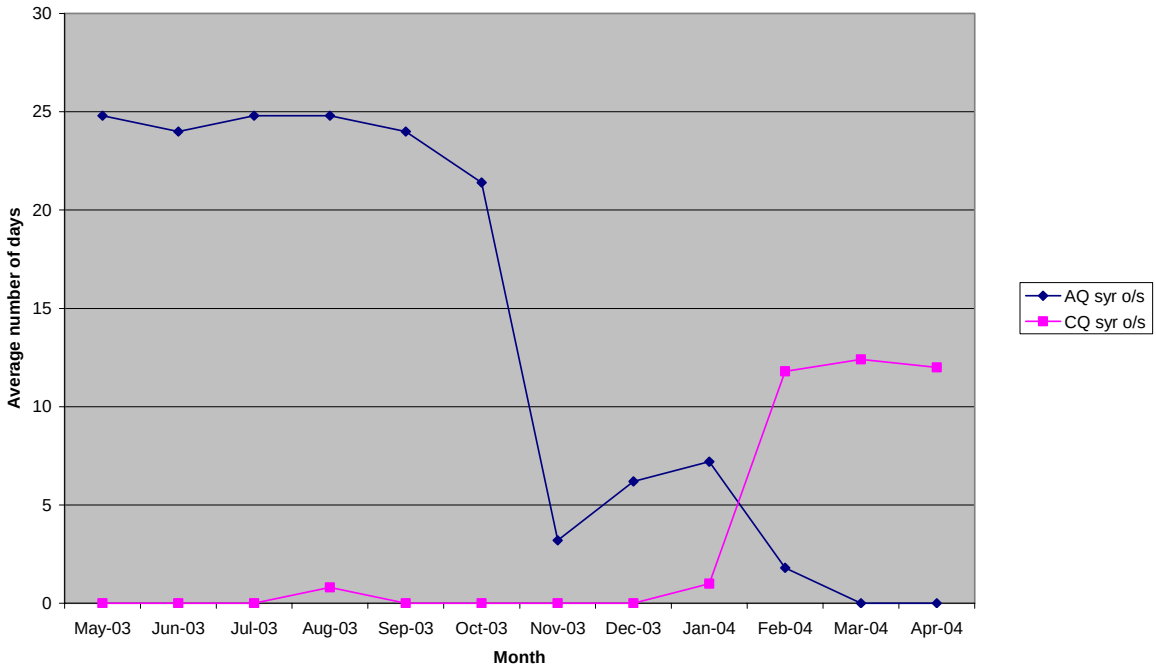


Figure 4. Stock-outs of AQ suspension and CQ suspension in Touba District

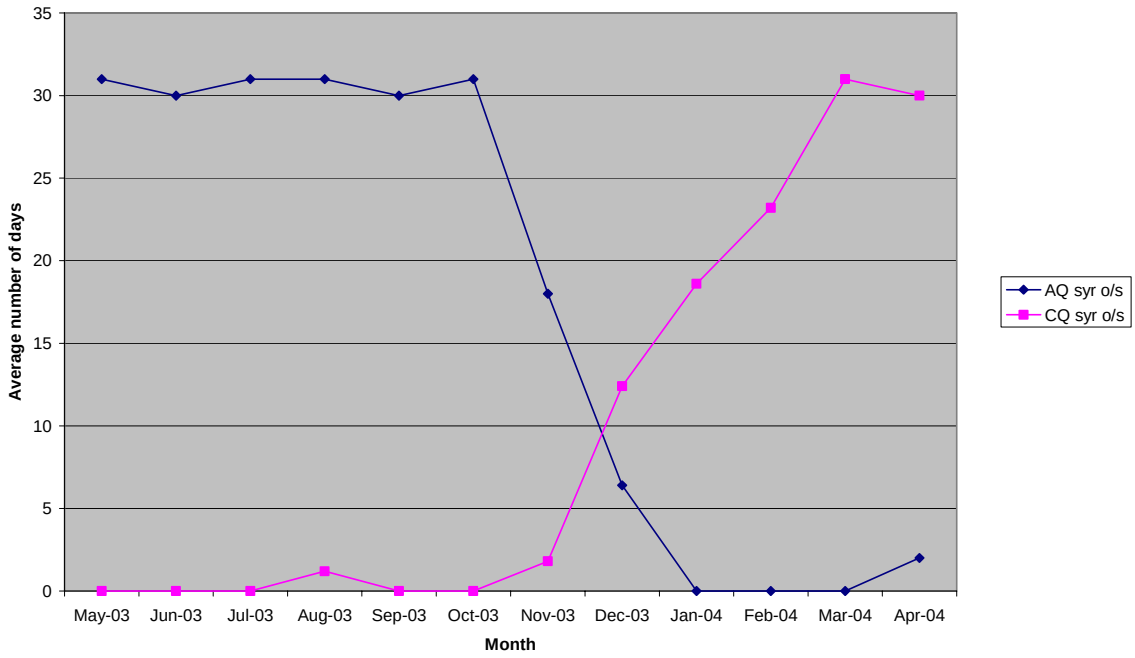


Figure 5. Stock-out of AQ suspension and CQ suspension in Richard Toll District

Availability of CQ Tablets and Suspension

Before the change in policy, CQ was the recommended first-line medicine for the treatment of malaria. It is not clear whether a specific plan was developed to phase out the stocks of CQ as the SP and AQ became more widely available in the health facilities, but the expectation in doing this analysis is that the stocks of CQ tablets and suspension should decline as the uptake of the new treatment policy by health care providers and patients increases and as no new stock of CQ tablets or suspension is procured.

In RT District, the stock-outs of CQ suspension began to occur in some of the health facilities surveyed in November 2003 (Figure 5) and the CQ suspension was out of stock in all the health facilities by April 2004. The physical inventory done in May 2004 found no stocks of CQ suspension in any of the health facilities surveyed in this district (Table 7).

In Touba District, the stock-outs of CQ suspension began to occur in January 2004 (Figure 4) in some of the health facilities surveyed. However, the data suggest that some of the health facilities in the district may still have been making purchases of CQ suspension after this date. By April 2004, CQ suspension was out of stock in only two of five health facilities, and it remained available in the other health facilities. The quantity of CQ suspension found in the health facilities surveyed in this district during the physical inventory done in May 2004 ranged from 0 to 49,320 ml (equivalent to 0–4,932 doses[10]), with an average of 9,350 ml (935 doses) (Table 7).

An analysis of the stock-out data showed that CQ tablets have been consistently available in all but one of the health facilities surveyed in Touba District for the period between May 2003 and April 2004 (Table 6). In the only health facility where CQ tablets were out of stock for the entire month of February 2004, the subsequent availability in March and April at this same health facility suggests that CQ tablets were still being purchased and stocked even though they were no longer recommended for use (Figure 2). The physical inventory found that CQ tablets were still available in all the health facilities in the district at the end May 2004 in quantities ranging from 370 to 81,000 tablets (equivalent to 37–8,100 adult doses[11]), with an average of 17,629 tablets (1,762 adult doses).

Phase-out of CQ tablets in the health facilities surveyed in Richard Toll District appears to have been more consistent. The analysis of the stock-out data from May 2003 to April 2004 showed increasing stock-outs of CQ tablets as the SP and AQ became more widely available (Figure 3). Only two of the five health facilities surveyed had no stock-outs of CQ tablets during this time period. The inventory done in May 2004 found that the quantity of CQ tablets available in these health facilities ranged from 0 to 650 tablets (0–65 adult doses).

Availability of Quinine

Quinine is the recommended treatment for cases of severe malaria in both the new and old treatment guidelines. None of the health facilities surveyed stocked quinine tablets. Analysis of

[10] CQ suspension is dispensed in 60 ml bottles, which is considered here as the equivalent of one dose.
[11] 10 tablets of CQ = 1 adult dose.

the stock-out data for injectable quinine shows that it was consistently available in either the 200 mg or 400 mg strengths in 8 of 10 health facilities surveyed (Table 6). The physical inventory in May 2004 found that injectable quinine was available in all the health facilities surveyed (Table 7).

Pricing of Antimalarials on the Tracer List

Information on prices of the antimalarials was obtained from a review of the medical records, from interviews with the dispensers, and from a review of the patient records and ledgers using the Medical Records Review Form. The limited information available in the medical records meant that this pricing information was not always available. The median prices of the antimalarials on the tracer list are listed in Table 8.

Table 8. Median Price per Unit of Antimalarials (XOF)

	Median Price per Unit						
	CQ Tab	CQ Syr	AQ Tab	AQ Syr	SP Tab	Qu 200 Inj	Qu 400 Inj
From interviews with the dispensers	10	515	30	975	100	100	145
From medical record reviews	10	520	n/a	n/a	60	100	175

Note: XOF = Communauté financière africain franc, Banque Centrale des états de l'Afrique de l'ouest; n/a = not available.

As expected, a comparison of the cost of purchasing the full adult dose of CQ compared with the cost of purchasing the SP/AQ combination shows that the combination costs more than the CQ monotherapy (Table 9). Unfortunately, data were insufficient to compare the difference in the price of the SP/AQ combination between the districts or the health facilities.

Table 9. Comparison of the Cost of Purchasing a Full Adult Dose of CQ, SP, and AQ

		Median Cost from Survey	
Medicine	Adult Dose (Tab)	XOF	USD[a]
CQ tablet	10	100	0.18
SP tablet	3	300	0.55
AQ tablet	9	270	0.50

[a]1 USD = 545 XOF on December 31, 2003. (Source: http://www.oanda.com/convert/classic.)

USE OF ANTIMALARIALS

Ideally, the effective implementation of a new treatment policy requires that the Standard Treatment Guidelines and Essential Medicines List be developed or updated and disseminated to the health facilities for use by the health care providers there. Effective implementation also requires that the health care providers be trained or oriented in the new policy. Finally, it requires that the patients be informed on the appropriate medicines for their condition and on what to expect while being treated.

Given those requirements, the assessors expected that the STGs and EML had been reviewed and that updated copies were sent to the health facilities when the SP/AQ policy was adopted. Orientation or training sessions were expected to have been held to inform or train the health care providers about the new policies, and IEC campaigns were expected to have occurred to inform patients about the new policy. During this assessment, data on the knowledge and practices of the health care providers and patients with respect to this new policy were collected and analyzed.

Characteristics of Prescribers and Dispensers Interviewed

Twenty prescribers were interviewed, 8 in Richard Toll District and 12 in Touba District. Most of these prescribers (16/20) were nurses, nurse assistants, or midwives (Table 10). Only 2 of the prescribers interviewed were medical doctors, one in each district, and both of them worked in the district health center. Two of the prescribers interviewed were community health workers (Agent de Santé Communautaire, or ASC), both whom worked in rural health posts in Richard Toll District.

Table 10. Professional Training of Prescribers Interviewed

Professional Level	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
Medical doctor	1	0	1	0	2
Nurse, nurse assistant, midwife	2	3	4	7	16
ASC	0	2	0	0	2
Total	3	5	5	7	20

Of the 20 prescribers, 14 reported that they had had some training in the management of malaria; 4 of 20 reported that they had never had any training in the management of malaria; and 2 of 20 did not respond. Of those who reported having had any training, only 4 of 14 reported that they had received their last training in the preceding 12 months. On average, as reported it had been 15.4 months since the prescribers had had any training in the management of malaria (Table 11).

Table 11. Months since the Last Training of Prescribers in Management of Malaria

Period	RT District			Touba District			Both
	Urban	Rural	All	Urban	Rural	All	
Average (months)	15.5	21.3	19.3	16.3	10.0	12.4	15.4
Minimum (months)	7.0	6.0	6.0	1.0	1.0	1.0	1.0
Maximum (months)	24.0	36.0	36.0	24.0	13.0	24.0	36.0

Thirteen dispensers were interviewed, 7 in Richard Toll District and 6 in Touba District. Most of the dispensers interviewed (7/13) reported that they had received no professional training. Of the remaining 6 dispensers, 5 were trained as ASC, while 1 was a nurse, nurse assistant, or midwife (Table 12).

Table 12. Professional Training of the Dispensers Interviewed

Professional Training	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
Nurse, nurse assistant, midwife	0	1	0	0	1
ASC	0	3	1	1	5
None	2	1	1	3	7
Total	2	5	2	4	13

In addition to the prescribers and dispensers, six key decision makers were interviewed. In each district, the MCR, the MCD, and the PCD were interviewed. The MCR and the MCD are chief health care managers for the region and district, respectively. The PCD is a community leader who does not necessarily have medical training.

Availability and Use of Standard Treatment Guidelines

Availability of STGs is one of the determinants of whether prescribers will use the STG when making a decision on medications to prescribe. Only 10 of the 20 prescribers interviewed in both districts said STGs were available in their health facility (Table 13). This proportion was the same in each of the two districts when considered individually. A slightly larger proportion of prescribers in urban health facilities (5/8) compared to rural health facilities (5/12) reported that they had STGs available at their health facilities.

Table 13. Are STGs Available at the Facility? Response from Prescribers Interviewed

Response	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
Yes	3	1	2	4	10
No	0	4	2	3	9
Don't know	0	0	1	0	1
Total	3	5	5	7	20

Although the data collection instruments included a question to determine the date of publication of the available STGs, data collected in response to this question were not sufficient to determine whether these STGs were current and included the new malaria treatment guidelines.

The number of prescribers interviewed who reported that they followed the national malaria treatment guidelines when treating malaria was only 12 of 20 (Table 14). A slightly greater proportion (6/8) of prescribers in urban health facilities, compared to only 6 of 12 prescribers in rural health facilities, reported that they followed the national malaria treatment guidelines. These findings are consistent with the reported availability of the guidelines in the health facilities, as previously discussed.

Table 14. Number of Prescribers Reporting That They Follow the National Malaria STGs

Response	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
Yes	3	2	3	4	12
No	0	2	1	0	3
No response	0	1	1	3	5
Total	3	5	5	7	20

Prescribing and Dispensing Knowledge

Communication of the Change in Malaria Treatment Policy

Timely communication of the change in malaria treatment policy to all health care providers is necessary if they are to adhere to the new policy in their prescribing and dispensing practices. The six key decision makers were asked when the change in the treatment policy occurred. One of the six did not know when this change occurred, and the other five gave different dates for the change, ranging from April 2003 to February 2004 (Table 16). Only one of the six correctly reported that the change occurred in July 2003. The one key decision maker (from Touba District) who said the change occurred in April 2003 also reported that he initiated the change himself as a result of the evidence of increasing resistance to CQ, thus providing some support for the anecdotal evidence that these were the early-adopter districts.

Part of the responsibility of the MCR and the MCD is managing the communication of the changes in the medical policies to the health care providers in their region and district, respectively. Four of the six key decision makers, the two MCDs and the two MCRs, were therefore interviewed to provide information on the communication strategies used to disseminate the new policy to the health care providers. They reported that four cadres of health care providers were targeted to receive the communication of the change in treatment policy for malaria (Table 15). All four reported that doctors were targeted to receive communication of the change in policy; three of four reported that nurses and midwives were also targeted to receive communication of the change in policy; and one reported that ASCs were also targeted to receive communication of the change in policy.

Table 15. Cadres of Health Care Providers Targeted by Communication Strategies

Health Care Provider	Proportion
Doctors	4/4
Nurses	3/4
Midwives	3/4
ASC	1/4

Of the four key decision makers interviewed, two reported that the change in policy was first communicated to the health care providers in July 2003. This date is consistent with the date that the national policy was changed but is later than the date indicated by the anecdotal reports, which suggested that the change in these two districts occurred before the change in national policy. Interestingly, the key decision maker who reported that he had initiated the change in policy in April 2003 was one of those who reported that the change was communicated to the health care providers in July 2003. Of the two remaining key decision makers interviewed, one reported that the change in malaria treatment policy was first communicated to the health care providers in November 2003, and the other reported that the change in policy was first communicated to the health care providers in January 2004—both dates well after the date that the national malaria policy was changed.

This lack of clarity from the key decision makers in determining when the malaria policy change was first communicated to health care providers was reflected in the responses from the prescribers when they were asked about the timing of the policy change (Table 16). Of the 20 prescribers interviewed, 18 correctly reported the malaria treatment policy had changed in the preceding 12 months. Of those, only 2 of 18 reported that this change occurred in June–July 2003, when the national policy was officially changed. None of the prescribers interviewed reported that the change in policy had occurred before June 2003. Only 1 of the 20 prescribers interviewed reported that there had been no change in the malaria treatment policy in the preceding 12 months, and 1of 20 did not know whether there had been a change in the policy.

Table 16. Providers' Recall of the Date of Change in National Malaria Treatment Policy

Date	Number of Key Decision Makers Responding	Number of Prescribers Responding				
		RT District		Touba District		
		Urban	Rural	Urban	Rural	Total
Apr-03	**1**	—	—	—	—	—
Jun-03	**—**	—	—	1	—	1
Jul-03	**1**	—	—	1	—	1
Aug-03	**—**	1	—	—	—	1
Oct-03	**1**	1	1	—	—	2
Dec-03	**1**	—	4	1	—	5
Jan-04	**—**	—	—	—	1	1
Feb-04	**1**	—	—	—	2	2
Apr-04	**—**	—	—	—	2	2
Don't know/did not respond	**1**	1	—	2	2	5
Total	**6**	3	5	5	7	20

Three of the four key decision makers interviewed about communication of the change in policy reported that workshops had been held to communicate the change in policy to the health care providers (Table 17); however, these three key decision makers also reported that there had been no training sessions to prepare the health care providers for the change in policy.

Table 17. Communication Strategies Used to Disseminate the Change in Policy

Strategy	Proportion
Workshop	3/4
Treatment guidelines	1/4
Job aids/charts	1/4
Memo/directive	1/4
Training sessions	1/4

Only one of the four key decision makers interviewed reported that training sessions had been organized by the PNLP to prepare providers for the change in policy and that the training sessions were first held in July–August 2003. He also reported that these training sessions occurred in the hospitals and were not held at the health centers or health posts.

Only the 4 of 20 prescribers who reported that they had received training in the management of malaria in the 12 months preceding May 2004 (Table 11) would potentially have received any training on the new treatment policy.

Knowledge of Recommended Treatment in Adults

Despite the limited training that was available to prescribers to prepare them for the change in treatment policy and the limited availability of the STGs, most of the prescribers interviewed (15/20) knew that SP/AQ is currently recommended for the treatment of adults with uncomplicated malaria (Table 18). Of the 20 prescribers, 3 did not know what the recommended treatment for adults with uncomplicated malaria was.

Table 18. Prescribers' Knowledge of Recommended Treatment for Malaria in Adults

Recommended Treatment	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
SP/AQ	3	4	4	4	15
CQ/SP	0	0	0	1	1
SP	0	0	0	1	1
Don't know	0	1	1	1	3
Total	3	5	5	7	20

A smaller proportion of the dispensers interviewed (6/13) knew that SP/AQ was the recommended treatment for adults with uncomplicated malaria. Only 2 of the 7 dispensers in Richard Toll District reported that SP/AQ was the recommended treatment for uncomplicated malaria in adults, compared with 4 of the 6 dispensers interviewed in Touba District. Of the 13 total dispensers, 3 did not know the recommended treatment (Table 19).

Table 19. Dispensers' Knowledge of Recommended Treatment for Malaria in Adults

Recommended Treatment	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
SP/AQ	0	2	1	3	6
AQ	0	1	0	0	1
CQ	1	0	0	0	1
Quinine combinations	1	1	0	0	2
Don't know	0	1	1	1	3
Total	2	5	2	4	13

When asked for the most effective treatment for malaria in adults, 9 of the 20 prescribers chose the SP/AQ combination, while 2 of 20 chose an ACT, and 3 of 20 reported that they did not know. Of the six key decision makers (the MCD, MCR, and PCD) asked the same question, three chose the SP/AQ combination, two chose the ACT, and one reported that he did not know (Table 20).

Table 20. Opinions on the Most Effective Medicines to Treat Malaria in Adults

Most Effective Medicine	Prescribers	Key Decision Makers
SP/AQ	9/20	3/6
CQ	1/20	—
ACT	2/20	2/6
Don't know	3/20	1/6

Knowledge of Recommended Treatment in Children

Only half of the prescribers interviewed (10/20) knew that SP/AQ is the recommended treatment in Senegal for children with uncomplicated malaria (Table 21). Six of the 8 prescribers interviewed in Richard Toll knew that SP/AQ was the recommended treatment, compared with only 4 of 12 of the prescribers interviewed in Touba. Of the 20 prescribers, 8 reported that they did not know the recommended treatment.

Table 21: Prescribers' Knowledge of Recommended Treatment for Malaria in Children

Recommended Treatment	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
SP/AQ	3	3	1	3	10
AQ syr	0	0	0	2	2
Don't know	0	2	4	2	8
Total	3	5	5	7	20

A smaller proportion of the dispensers interviewed (3/13), all of whom work in rural health posts, knew that SP/AQ was the recommended treatment for children under five years of age with uncomplicated malaria. A larger proportion (5/13) reported that AQ suspension was the recommended medicine to treat children with uncomplicated malaria. Of the 13 dispensers interviewed, 2 reported that they did not know the recommended medicine to treat malaria in children (Table 22).

Table 22. Dispensers' Knowledge of Recommended Treatment for Malaria in Children under Five Years of Age

Recommended Treatment	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
SP/AQ	0	2	0	1	3
AQ syr	0	2	2	1	5
CQ	2	0	0	0	2
Quinine combinations	0	0	0	1	1
Don't know	0	1	0	1	2
Total	2	5	2	4	13

Use of SP/AQ Combination to Treat Pregnant Women with Malaria

Most of the prescribers and dispensers interviewed did not believe that the SP/AQ could be used in pregnant women. Of the 20 prescribers interviewed, 11 believed that the SP/AQ combination should not be used to treat pregnant women with malaria, mainly because of concerns over the toxicity of AQ in pregnant women. Eight of 20 believed that the combination could be used in pregnant women (Table 23).

Table 23. Prescribers' Opinion Whether Pregnant Women Can Use SP/AQ

Response	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
Yes	1	1	2	4	8
No	2	3	3	3	11
Did not respond	0	1	0	0	1
Total	3	5	5	7	20

A majority of dispensers (7/13) also reported that the SP/AQ combination could not be used in pregnant women with malaria. Only 5 of 13 reported that the combination could be used (Table 24).

Table 24. Dispensers' Opinion Whether Pregnant Women Can Use SP/AQ

Response	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
Yes	0	2	1	2	5
No	1	3	1	2	7
Don't know	1	0	0	0	1
Total	2	5	2	4	13

Concerns Relating to the Use of SP/AQ

Despite general awareness of the SP/AQ combination and the preference for this combination among prescribers, 17 of 20 reported that they still have some concerns about the use of this combination (Table 25).

Table 25. Number of Prescribers with Concerns about the Use of SP/AQ

Has Concerns	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
Yes	2	4	5	6	17
No	1	1	0	1	3
Total	3	5	5	7	20

Of the 17 prescribers interviewed who reported having concerns about the use of SP/AQ, 5 reported that their main concern was the potential adverse effects that may occur in patients using the combination, 4 reported that they needed more information or training on the new combination, and 3 reported that they were concerned that SP/AQ may not be available in the health facilities.

Prescribing Practices

Malaria diagnosis in all the health facilities is primarily based on clinical symptoms. Only 8 of the 20 prescribers interviewed reported that they used malaria tests in addition to clinical symptoms in making a diagnosis of malaria in their clinical facilities (Table 26). The method for diagnosis commonly used is microscopy, and the reported prices for these tests range from XOF 500 to XOF 2000, with a median price of XOF 1250.

Of the 12 prescribers interviewed in Touba District, 7 reported that they used malaria tests in addition to clinical symptoms in making a diagnosis of malaria. Of these 7, 4 worked in the same health facility—the health center—and this was also the only health facility where all the prescribers gave the same response to this question. The remaining 3 prescribers worked for different health posts, and their responses were not consistent with the responses from the other prescribers interviewed in the same facilities.

Table 26. Prescribers' Report of the Methods Used to Diagnose Malaria

Method	RT District		Touba District		Total
	HC	PSU/PSR	HC	PSU/PSR	
Clinical symptoms only	1	6	0	5	12
Clinical symptoms and malaria tests	1	0	4	3	8
Total	2	6	4	8	20

Only 1 of the 8 prescribers interviewed in RT District reported using malaria tests in addition to clinical symptoms to diagnose malaria. However, this report was contradicted by that of the other prescribers interviewed from the same facility, who reported that they used clinical symptoms alone to diagnose malaria.

After the diagnosis is made, only 13 of the 20 prescribers interviewed reported that they currently prescribe SP/AQ combination to adults with uncomplicated malaria as recommended in the national malaria treatment guidelines (Table 27). Compliance with the guidelines is much better in the urban health centers, where 7 of 8 prescribers reported that they prescribe SP/AQ to adults with malaria. Only 6 of 12 prescribers in rural health facilities reported that they were compliant with the treatment guidelines.

Table 27. Medicines Prescribers Report They Are Currently Prescribing to Adults with Malaria

Medicine	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
SP/AQ	3	4	4	2	13
CQ	0	1	0	2	3
SP	0	0	0	1	1
Quinine combinations	0	0	1	2	3
Total	3	5	5	7	20

For the purposes of this analysis, any respondent who reported that the correct adult dose for SP was three tablets taken at once or three tablets taken once a day for one day was determined to have given the correct dose of SP. For AQ, the correct adult dose was defined as either three tablets taken each day for three days or 10 mg/kg per day for three days. Of the 13 prescribers who reported that they were currently prescribing the SP/AQ combination, 12 gave the correct dose of SP as defined and 10 gave the correct dose of AQ (Table 28).

Table 28. Proportion of Prescribers Who Provided Appropriate Dosing Information for SP and AQ

Medicine	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
SP	3/3	4/4	3/4	2/2	12/13
AQ	3/3	4/4	2/4	1/2	10/13

The prescribing practices with respect to childhood malaria were more problematic. Less than half of the prescribers (8/20) reported that they are currently prescribing SP/AQ combination to children with malaria. Most of those were from RT District, where 6 of 8 prescribers reported that they were prescribing SP/AQ combination to children with malaria. In Touba District, most of the prescribers (6/12) reported that they are currently prescribing AQ suspension to children with malaria. Only 2 of the 12 prescribers in this district reported that they currently prescribe SP/AQ suspension to children with malaria (Table 29).

Most of the prescribers who reported prescribing SP and AQ to children under five years of age reported that the appropriate doses for these medicines were determined by weight and taken for one day and three days, respectively. In the absence of additional information, it was difficult in this analysis to conclude that the dosages of these medicines prescribed to children were correct.

Table 29. Medicines Prescribers Report They Are Currently Prescribing to Children with Malaria

Medicine	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
SP/AQ	3	3	0	2	8
CQ	0	1	0	0	1
AQ syr	0	1	3	3	7
Quinine combinations	0	0	1	2	3
Don't know	0	0	1	0	1
Total	3	5	5	7	20

The findings on the reported prescribing practices for adults with malaria are consistent with the findings on the availability and use of the treatment guidelines and the findings on the knowledge of the prescribers with respect to these treatment guidelines. Where the STGs were available, more prescribers knew the recommended treatments and more prescribers reported using the guidelines in prescribing treatment for their malaria patients.

Results of the Observation of Patient-Prescriber Interactions

Observations on Antimalarials Prescribed

In both districts, a total of 56 interactions was observed between patients and prescribers in which an antimalarial was prescribed; 45 percent of these interactions were in RT and 55 percent were in Touba. Fifty-seven percent of the interactions were in health facilities in the urban areas (Table 30).

Table 30. Number of Patient-Prescriber Interactions Observed Where an Antimalarial Was Prescribed

District	Urban	Rural	All
RT	15	10	25
TB	17	14	31
Both	32	24	56

Only 63 percent of the 56 patients received the SP/AQ combination. In RT District, of those patients receiving antimalarials, a greater proportion in the rural health facilities (90 percent) received the SP/AQ combination; in urban health facilities, only 40 percent of the patients observed who received an antimalarial received the combination (Table 31). Most of the patients in the urban health facilities in the district (9/15) received SP, AQ, or artemether (ATM) monotherapy, with the majority of them (7/15) receiving AQ monotherapy treatment.

In Touba District, a reverse pattern was seen. Compliance with the SP/AQ combination was higher in the urban health facilities than in the rural health facilities. Of the patients who received antimalarials in the urban health facilities, 71 percent received the combination, whereas 57 percent of the patients in the rural health facilities received the combination. Forty-three percent of the patients in the rural health facilities in Touba were prescribed SP, AQ, CQ, or ATM monotherapy.

Table 31. Percentage of Patients Receiving an Antimalarial Who Were Prescribed SP/AQ Combination

District	Urban	Rural	All
RT	40%	90%	60%
TB	71%	57%	65%
Both	56%	71%	63%

Observation of the Quality of Information about the Antimalarials Provided by Prescribers to Patients or Caregivers

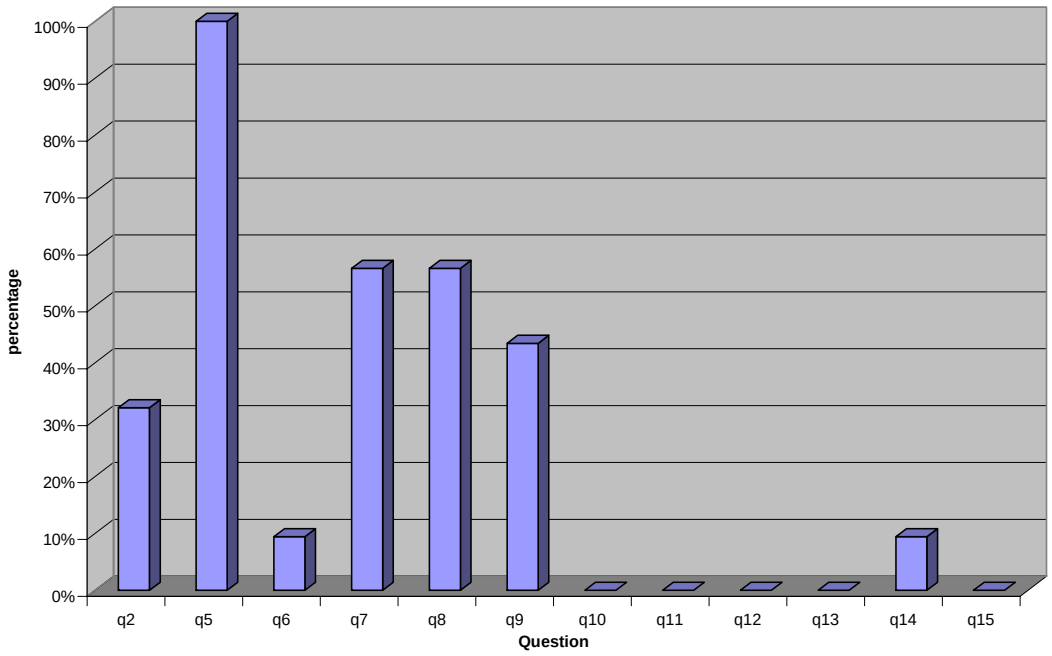
In order to promote the appropriate use of the antimalarials, patients need to know the name of the medicines prescribed, how and when to take each of these medicines, what to do if they do not improve after treatment, and what potential adverse effects may be associated with these medicines. These issues were explored during the assessment by observing the interaction between the patient and the prescriber. The main observation points that were documented during the patient-prescriber interaction are summarized in Table 32.

Table 32. Key for Figures 6 and 7: Main Observation Points for Patient-Prescriber Interaction

Key	Observation Point
Q2	The provider mentions the **name of the medicine**.
Q5	The provider **gives** the client a **prescription**.
Q6	The provider indicates **what the medicine is for**.
Q7	The provider tells the client **when to take each dose**.
Q8	The provider fully explains **how often** the medicine should be taken, **when** to take it, and **how much** to take at a time.
Q9	The provider indicates **how many** tablets the client should purchase.
Q10	The provider **mentions** something about **side effects**.
Q11	The provider **specifies** the medicine's **side effects**.
Q12	The provider indicates that the medicine is **safe**.
Q13	The provider **asks the client to repeat** how often the medicine should be taken/the i**nstructions** for taking the medicine.
Q14	The provider tells the client **what to do if he/she does not get better**.
Q15	The provider asks the client whether he/she has any **questions**.

In total, 95 antimalarials were prescribed during the 56 patient-prescriber interactions that were observed. The analysis was done with respect to the information provided on each of the main observation points for each of the antimalarials prescribed—for example, if the patient received both SP and AQ, the quality of the information provided for each medicine was analyzed separately. For each observation point, "Yes" was entered if the prescriber's action was consistent with the action listed, and "No" if it was not consistent. The results of the analysis are summarized in Figure 6 for Richard Toll District and Figure 7 for Touba District.

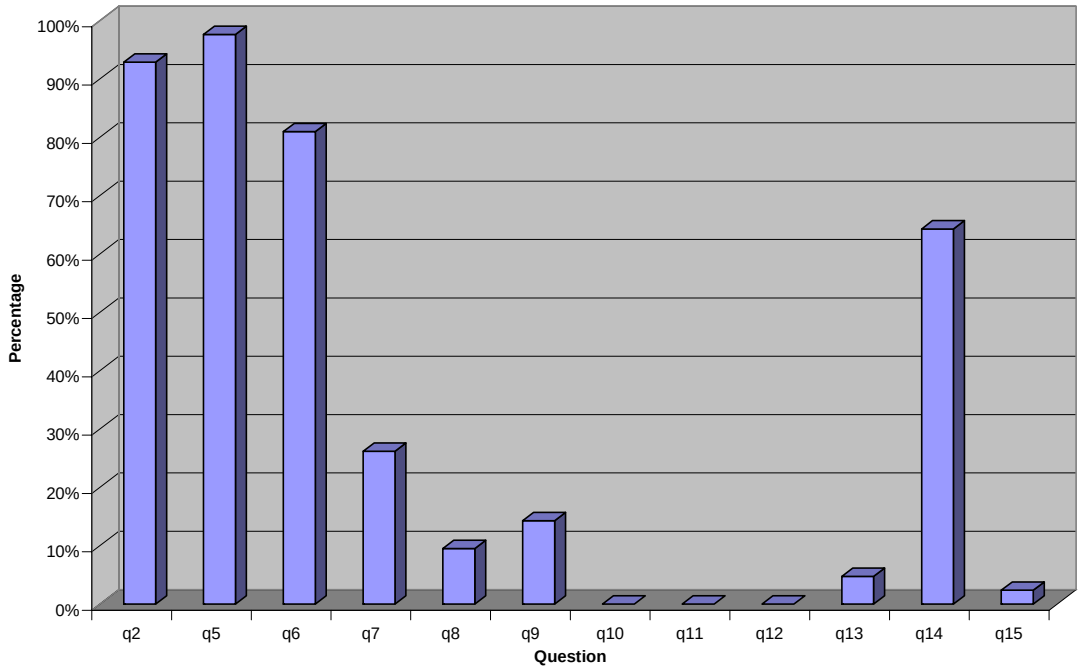
In Richard Toll District (Figure 6), a total of 53 antimalarials were prescribed in the 25 patient-prescriber interactions observed. In these interactions, all patients were given a prescription. The prescriber mentioned the name of the medicine for only 17 of 53 (32 percent) of the antimalarials prescribed, and in even fewer cases, 5 of 53 (9.4 percent), did the prescriber explain to the patient what the medicine was for. The prescriber fully explained how to take the medicines prescribed for 30 of 53 (57 percent) of the antimalarials, although none of the prescribers asked the patient to repeat the instructions given and none of them asked if the patient had any questions at the end of the consultation. None of the prescribers provided information on potential adverse effects associated with any of the antimalarials they prescribed, and for only 5 of 53 (9.4 percent) was the patient told what to if he or she did not get better after using the medicines prescribed.



Note: See Table 32 for text of questions.

Figure 6. Results of the observation of the prescriber-patient interaction in Richard Toll District

In Touba District (Figure 7), a total of 42 antimalarials was prescribed in the 31 patient-prescriber interactions observed. In these interactions, almost all the patients were given a prescription for the medicines. The prescriber mentioned the name of the medicine for almost all (39 of 42, or 93 percent) of the antimalarials prescribed and discussed the purpose of the medicine for slightly fewer (34 of 42, or 81 percent) of the antimalarials prescribed. However, the prescriber fully explained how to take the medicines prescribed for only 4 of 42 (9.5 percent) of the antimalarials, only 2 of 42 (4.8 percent) of the prescribers asked the patient to repeat the instructions given, and only 1 of 42 (2.4 percent) asked if the patient had any questions at the end of the consultation. None of the prescribers provided information on potential adverse effects associated with any of the antimalarials they prescribed, but in 27 of 42 interactions (64 percent) the patient was told what to if he or she did not get better after using the medicines prescribed.



Note: See Table 32 for text of questions.

Figure 7. Results of the observation of the patient-prescriber interaction in Touba District

Trends in Antimalarials Prescribed from May 2003 to April 2004

A retrospective analysis was done of the medical records of patients diagnosed with uncomplicated malaria to provide an understanding of the trends in prescribing antimalarials in the two districts over the preceding year. The team reviewed 719 medical records, which includes 353 records in Richard Toll District and 366 records in Touba District. The results of the analysis of the medical records reviewed in Richard Toll are summarized in Figure 8, and the results for Touba District are summarized in Figure 9.

From the review of the medical records, it appears that until October 2003 most of the patients in Richard Toll District were receiving prescriptions for CQ and none were receiving prescriptions for the SP/AQ combination. Prescriptions for SP/AQ began in November 2003, and by April 2004 most of the prescriptions (57 percent) were for the SP/AQ combination (Figure 8). This trend, though contrary to the anecdotal reports on the use of SP/AQ in the district, closely mirrors the trends seen in the availability of the SP and AQ in the health facilities in this district. As demonstrated graphically in Figure 9, AQ was not available in any of the health facilities surveyed in this district until November 2003, which is when prescriptions for the SP/AQ combination began. SP availability, though present in some health facilities from May 2003, also improved in November 2003. Prescriptions for CQ in the district were at 0 percent as of January 2004, and no prescriptions for CQ were found in the records for the subsequent months (Figure 8).

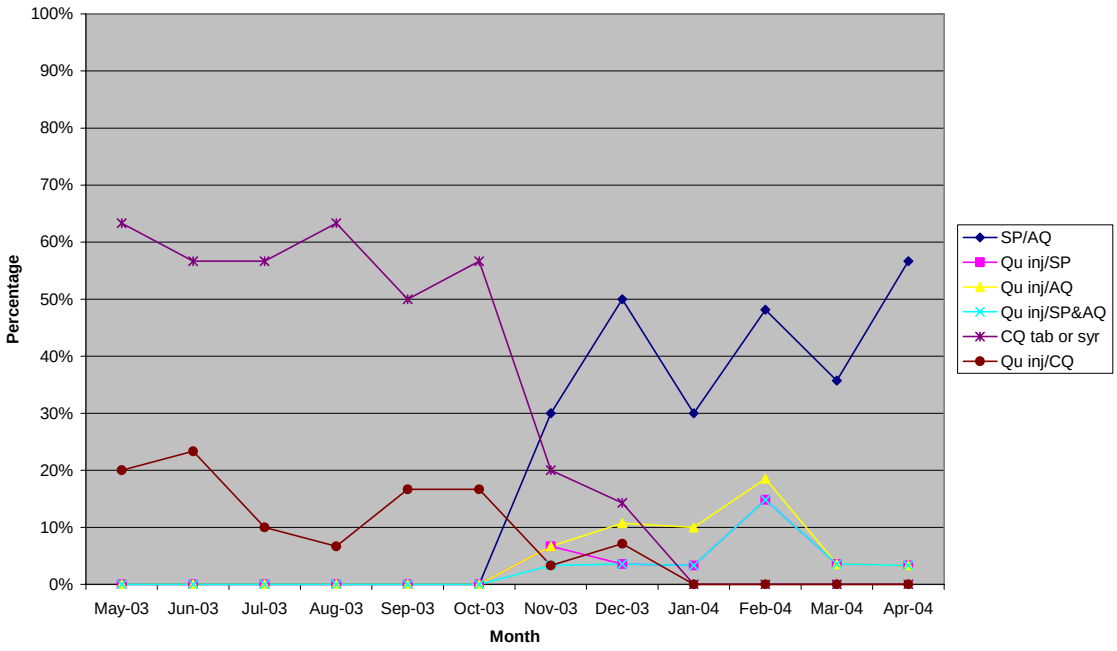


Figure 8. Antimalarials prescribed in RT District, May 2003–April 2004

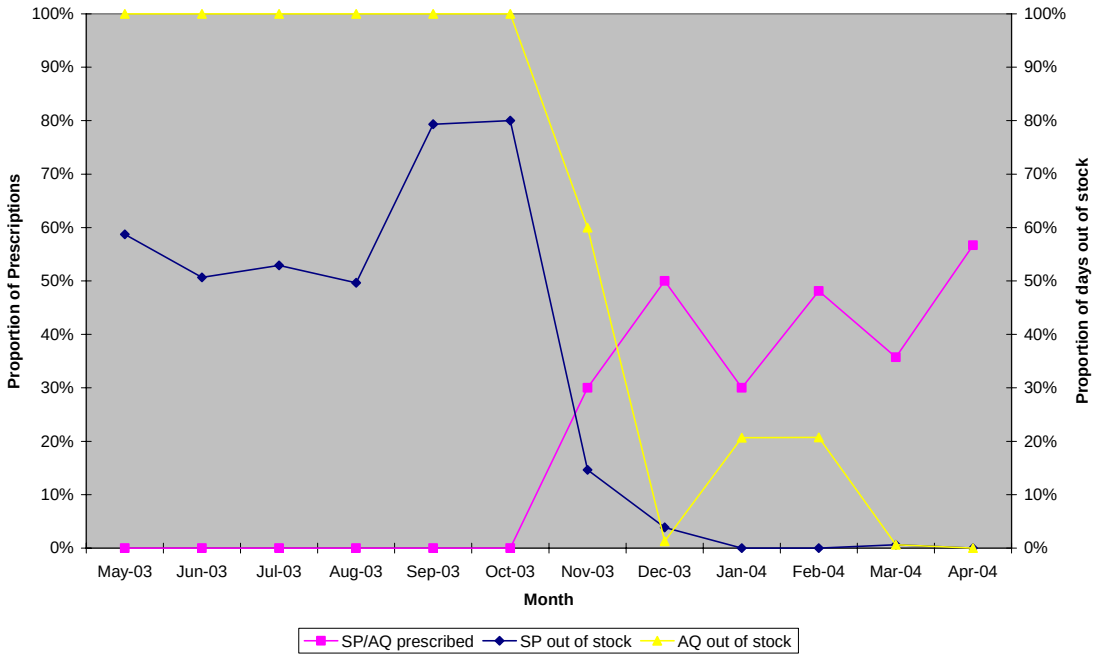


Figure 9. SP/AQ combination prescriptions compared to availability of SP and AQ in RT District

A different picture was seen when the sample of medical records for Touba District was analyzed. Consistent with the anecdotal reports, some patients were receiving the SP/AQ combination before the change in national policy at the end of June 2003. Of the patients seen in May 2003, 3 percent were receiving prescriptions for SP/AQ, and the number of prescriptions for this combination rose gradually over the following 12 months. Despite this earlier start in the use of the combination, not until March 2004 were most of the prescriptions for the SP/AQ combination (Figure 10).

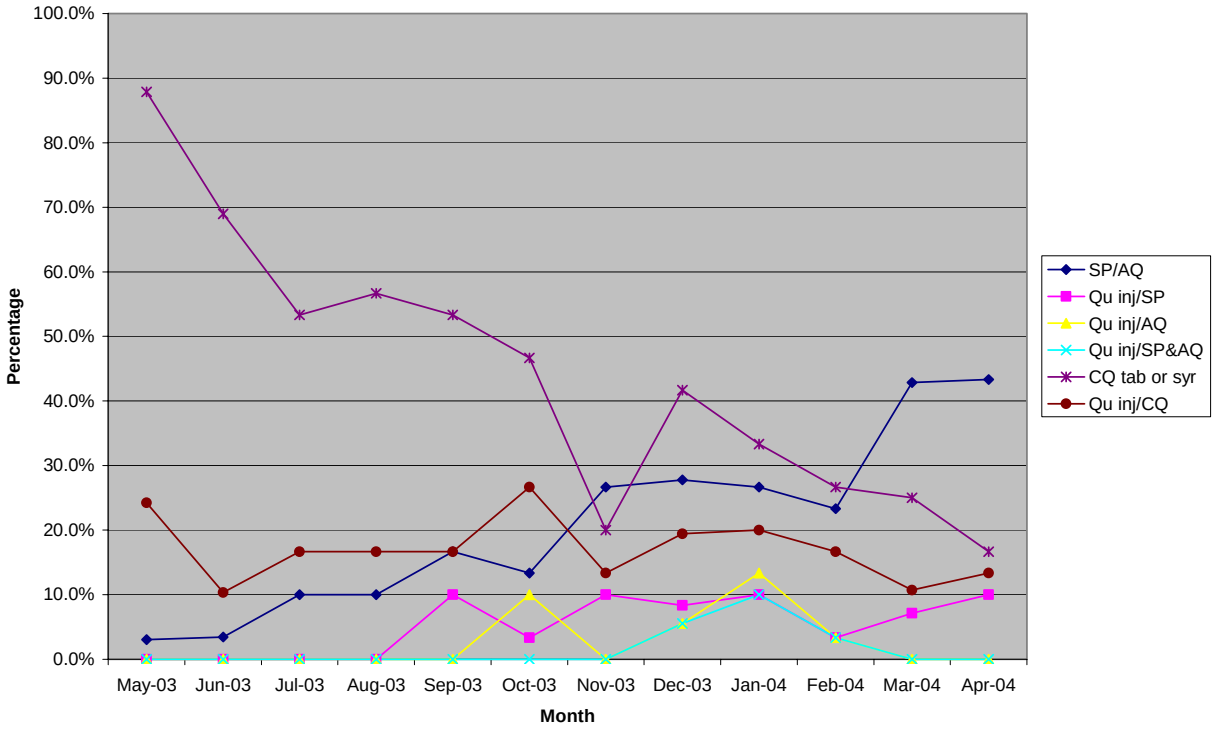


Figure 10. Antimalarials prescribed in Touba District, May 2003–April 2004

By April 2004, only 43 percent of prescriptions in Touba District were for the combination. In this district as well, SP/AQ prescriptions increased as the availability of SP and AQ in the health facilities improved (Figure 11). CQ prescriptions in this district had not ended as of April 2004, when 17 percent of all the prescriptions in the records reviewed were for CQ monotherapy. The prescriptions in this district, as seen from the records reviewed, do not appear to be related to the availability of the antimalarials in the district (Figure 10).

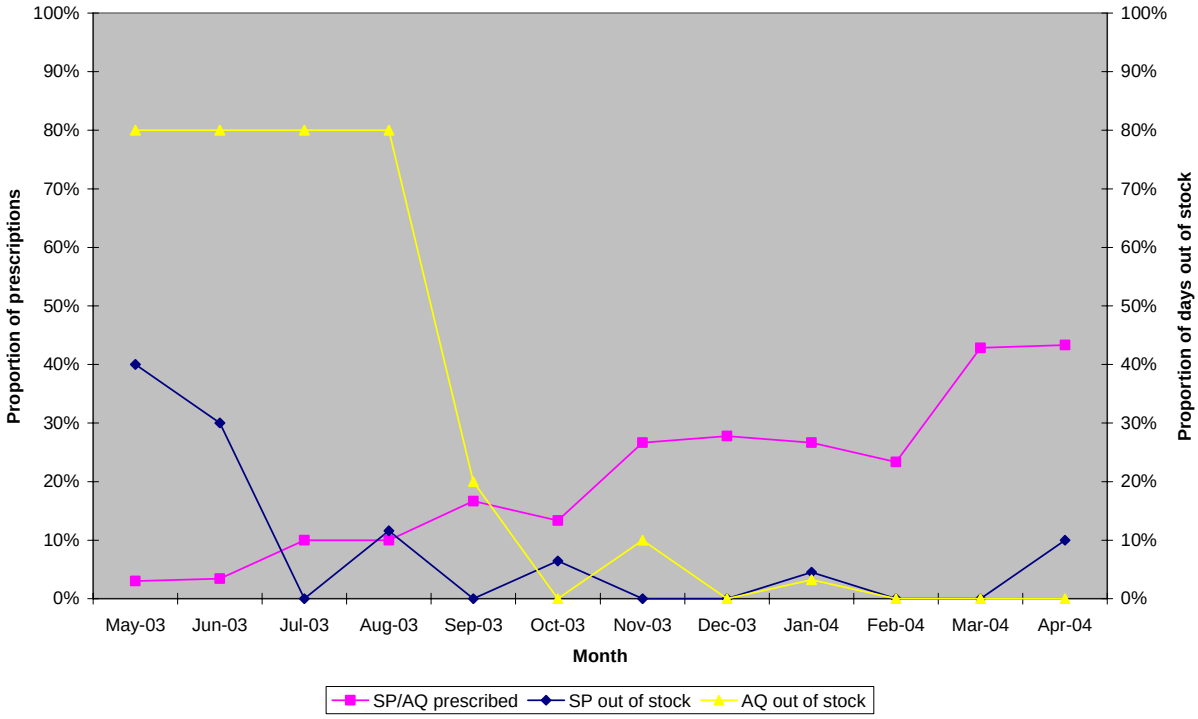


Figure 11. SP/AQ combination prescriptions compared to availability of SP and AQ in Touba District

Dispensing Practices

Only 5 of the 15 dispensers interviewed reported that SP/AQ was the most frequently dispensed antimalarial medicine at their health facilities (Table 33). This proportion is smaller than the proportion of prescribers who reported they were currently prescribing this medicine, as described previously.

Table 33. Dispensers' Report of Antimalarial Medicines Most Frequently Dispensed to Adults

Medicine	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
SP/AQ	0	2	1	2	5
AQ	0	2	0	0	2
SP	0	0	1	1	2
Quinine	2	0	1	2	5
Don't know	0	1	0	0	1
Total	2	5	3	5	15

Consistent with the prescribing practices reported by prescribers, most of the dispensers (9/14) reported that the medicine most frequently dispensed to children with malaria was AQ syrup (Table 34). Only 2 of the 14 dispensers reported that SP/AQ was the most frequently dispensed medicine for children with malaria.

Table 34. Dispensers' Report of Antimalarial Medicines Most Frequently Dispensed to Children

Medicine	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
SP/AQ	0	1	0	1	2
AQ syr	1	3	2	3	9
CQ syr	1	0	0	1	2
Don't know	0	1	0	0	1
Total	2	5	2	5	14

Most dispensers interviewed (10/13) report that they repackage the medicines they dispense into plastic bags. Only 3 of the 13 dispensers, all of whom work in health facilities in Touba District, reported that they dispense the medicines in their original packaging (Table 35).

Table 35. Packaging Used for Dispensing Medicines

Packaging	RT District		Touba District		
	Urban	Rural	Urban	Rural	Total
In original packaging	0	0	1	2	3
In plastic bag	2	5	1	2	10
Total	2	5	2	4	13

Only 2 of the 13 dispensers interviewed reported that they include the name of the medicine, how to take the medicine, and the duration of treatment on the dispensing packages they use (Table 36). The majority (8/13) reported that they include only one of these three elements on the dispensing packages.

Table 36. Dispensers' Reporting of Information Included on Labels of Dispensing Packages

Information Included on Labels	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
Drug name; how to take drug; duration of treatment	1	0	0	1	2
Drug name only	0	0	2	1	3
How to take drug only	0	4	0	0	4
How to take drug and duration of treatment	0	0	0	1	1
Don't know/nothing	1	1	0	1	3
Total	2	5	2	4	13

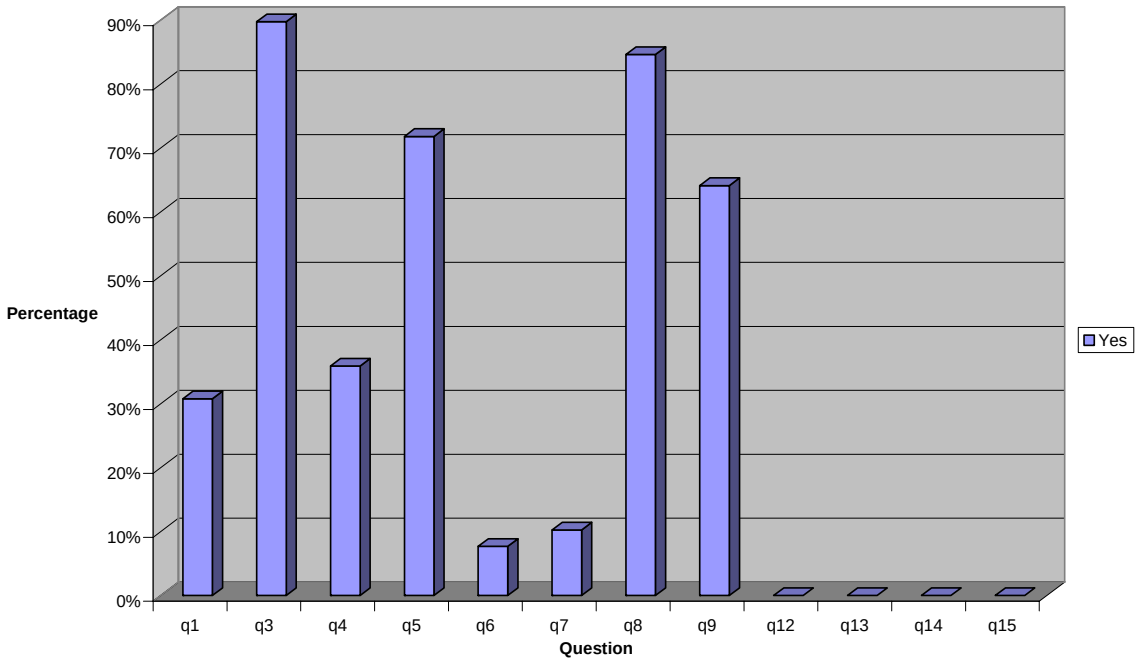
Results of the Observation of Patient-Dispenser Interactions

Only 75 of 95 (79 percent) of the prescriptions for antimalarials were filled in the dispensaries in the health facilities before patients' departure from the facility. The patient-dispenser interactions were observed to assess the quality of information that the dispensers provided to the patients to assist them in appropriately using the antimalarials prescribed. The analysis was done with respect to the information provided on each of the main observation points for each of the antimalarials dispensed—for example, if the patient received both SP and AQ, the quality of the information provided for each medicine was analyzed separately. For each observation point, "Yes" was entered if the dispenser's action was consistent with the action listed, and "No" if it was not consistent. The main observation points are listed in Table 37. The results of the analysis are summarized in Figure 12 for Richard Toll District and in Figure 13 for Touba District.

Table 37. Key for Figures 12 and 13: Main Observation Points for Patient-Dispenser Interaction

Key	Observation Point
q1	The dispenser mentions the **name of the medicine**.
q3	The dispenser indicates **how many** tablets the client should purchase.
q4	The dispenser **sells some** of the **medicine prescribed** to the client.
q5	The dispenser **sells all** of the **medicine prescribed** to the client.
q6	The dispenser says that the **medicine** prescribed is **not available**.
q7	The dispenser tells the patient **what the medicine is for**.
q8	The dispenser tells the client **when to take** the dose.
q9	The dispenser fully explains **how much** medicine and **how often** the medicine should be taken.
q12	The dispenser specifies the medicine's **side effects**.
q13	The dispenser mentions that the medicine is **safe**.
q14	The dispenser asks the client whether she or he has any **questions**.
q15	The dispenser **asks the client to repeat** how often she or he should take the medicine/the **instructions** for taking the medicine.

In Richard Toll District (Figure 12), a total of 39 antimalarials were dispensed to the patients whose interactions were observed. The dispenser mentioned the name of the medicine for only 12 of 39 (31 percent) of the antimalarials dispensed and indicated how many tablets the patient should purchase for the majority (35 of 39, or 90 percent) of the antimalarials dispensed. The dispenser sold to the client all of the medicines prescribed for 28 of 39 (72 percent) of the antimalarials, and he indicated that only 3 of 39 (7.7 percent) of the antimalarials were not available at that time. The dispenser fully explained how much of and how often to take the medicine for 25 of 39 (64 percent) of the antimalarials dispensed, though for only 16 of 39 (41 percent) of the antimalarials did the dispenser ask the client to repeat the instructions provided. None of the dispensers provided information on the potential adverse effects associated with any of the antimalarials dispensed.

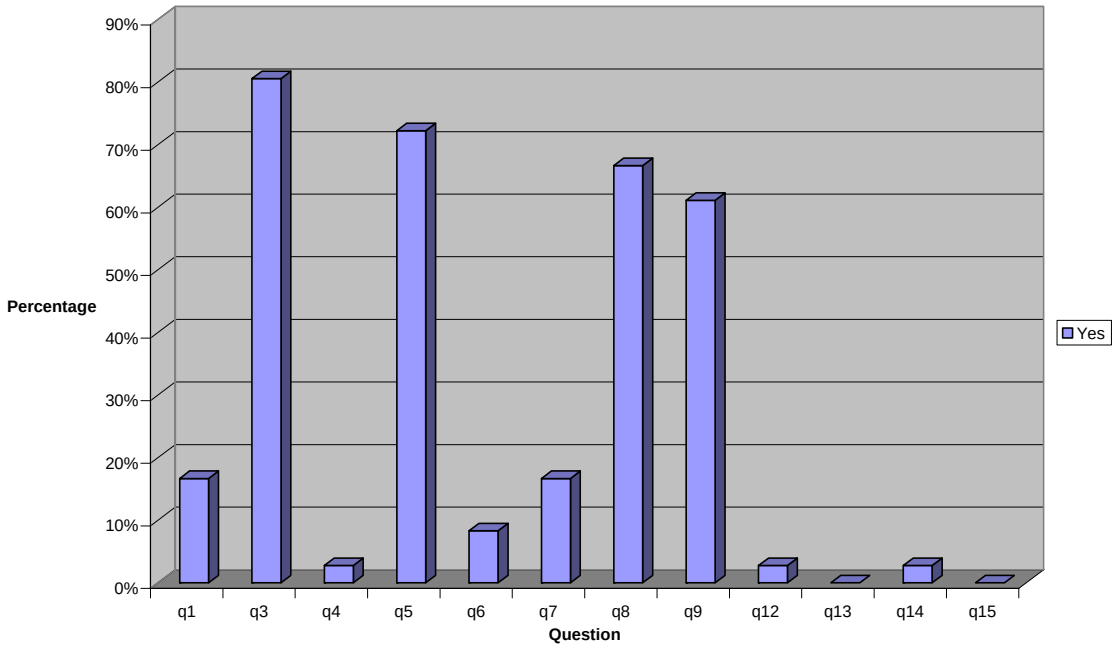


Note: See Table 37 for text of questions.

Figure 12. Results of the patient-dispenser interaction in Richard Toll District

In Touba District (Figure 13), a total of 36 antimalarials was dispensed to the patients whose interactions were observed. The dispenser mentioned the name of the medicine for only 6 of 36 (17 percent) of the antimalarials dispensed and indicated how many tablets the patient should purchase for the majority (29 of 36, or 81 percent) of the antimalarials dispensed. The dispenser sold to the client all of the medicines prescribed for 26 of 36 (72 percent) of the antimalarials, and he indicated that only 3 of 36 (8.3 percent) of the antimalarials were not available at that time. The dispenser fully explained how much of and how often to take the medicine for 22 of 36 (61 percent) of the antimalarials dispensed, though for only 3 of 36 (8.3 percent) of the antimalarials did the dispenser ask the client to repeat the instructions provided. For only 1 of 36

(2.8 percent) of the antimalarials dispensed did the dispenser provide any information on the adverse effects associated with the medicine.



Note: See Table 37 for text of questions.

Figure 13. Results of the patient-dispenser interaction in Touba District

Patient Knowledge and Anticipated Use of Prescribed Medication

The patients whose interactions with the prescribers were observed were also targeted for an interview as they departed from the health facility. The purpose of these interviews was to assess the knowledge of the patients with respect to the medicines they had been prescribed, and in some cases dispensed, to get a sense of how likely it was that the patients would use these medicines appropriately. Only 49 of the 56 patients whose interactions with the prescriber were observed were interviewed on exiting the health facility. These patients had received 83 of the 95 antimalarials prescribed (Table 38).

Table 38. Antimalarials Received by Patients Interviewed, by District and Setting

District	Urban	Rural	All
RT	23	17	40
TB	21	22	43
Both	44	39	83

Of all the antimalarials prescribed to the patients interviewed, the patients could name correctly only 17 of 83. All these patients giving correct names were interviewed in Touba District. None of the patients interviewed in Richard Toll District could name any of the antimalarials they had been prescribed or received (Table 39).

Table 39. Number of Times Antimalarial Prescribed Is Correctly Named by Patient

District	Urban	Rural	All
RT	0	0	0
TB	9	8	17
Both	9	8	17

Of those instances where the patient correctly named the antimalarial prescribed, most patients (11/17) reported that the health provider in the facility had voluntarily provided the information or that they had asked the health provider for the information (Table 40). In 2 of the 17 instances, the patients reported that they knew the name of the medicine because they sold the medicines. Because this was a structured interview and there were no follow-up questions, no additional information was obtained on whether those individuals who reported that they sold the medicine were formal or informal drug sellers.

Table 40. Patients' Source of Information on Name of Antimalarial Prescribed

Response	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
Asked for its name	0	0	2	0	2
Health care provider told me	0	1	4	4	9
I know the drug	1	0	0	3	4
I sell the drug	0	0	2	0	2
Total	1	1	8	7	17

Most of the patients interviewed had already purchased the medicine from the dispensary. Only 25 of the 83 antimalarials prescribed had not been purchased by the patients who were interviewed before leaving the health facility. Of the 25 unfilled prescriptions, 17 were in Touba District and 8 in Richard Toll District.

For most of the unfilled prescriptions (13/25), the patients reported that they planned to fill them in the same facility; only 4 of the 25 prescriptions were to be filled at a private pharmacy. The patients reported that they did not know where they would purchase the medicines for only 3 of the 25 unfilled prescriptions (Table 41).

Table 41. Reported Sites for Filling Outstanding Prescriptions

Site	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
This facility	4	1	0	8	13
Another government health facility	1	0	0	0	1
Private pharmacy	2	0	2	0	4
Drugstore	0	0	2	0	2
Market	0	0	2	0	2
Don't know	0	1	2	0	3
Total	7	2	8	8	25

The patients reported that 14 of the 25 unfilled prescriptions for antimalarials were to be filled the same day and 8 were to be filled the next day. The patients reported that they did not know when they would purchase the medicines for only 3 of the 25 unfilled prescriptions (Table 42).

Table 42. Reported Date for Filling Outstanding Prescriptions

Date	RT District		Touba District		Total
	Urban	Rural	Urban	Rural	
Today	3	1	8	2	14
Tomorrow	4	0	0	4	8
Don't know	0	1	0	2	3
Total	7	2	8	8	25

Of the prescriptions for antimalarials that had been filled, only 23 of 51 were reported to have a label on the package used for dispensing the medicines. All the prescriptions that were filled in Touba District were reported to have a label on the package used to dispense the medicines, whereas only 1 of the 29 prescriptions filled in Richard Toll was reported to have had a label (Table 43).

Table 43. Number of Dispensing Packages That Were Labeled

District	Urban	Rural	All
RT	1	0	1/29
TB	10	12	22/22
Both	11	12	23/51

Few of the patients interviewed could correctly identify the purpose of the antimalarials they had been prescribed. Only 18 of the 83 prescriptions for antimalarials were correctly identified as

being used to "treat malaria" (Table 44). The patients reported that they did not know the purpose of 57 of the 83 antimalarials prescribed. The remaining patients reported that the antimalarials were used to "treat headache," "treat fever," or "treat the sick."

Table 44. Number of Antimalarials Correctly Identified as Being Used to Treat Malaria

District	Urban	Rural	All
RT	6	3	9
TB	2	7	9
Both	8	10	18

The patients' understanding of how to use the antimalarials was assessed by asking the patients the following three questions for each medicine prescribed to them—

- How many times a day will you need to take the medicine?
- How many tablets or spoons of syrup will you need to take or give each time?
- For how long will you need to take the medicine?

Most of the patients provided at least one correct response to these questions, although a few did not know how to use the medicines.

In Richard Toll, for 10 of the 40 antimalarials prescribed, the patients said that they "did not know" in response to at least one of these questions (Table 45), including 8 of 40 prescriptions where the patients in this district said that they "did not know" in response to all the three questions.

Table 45. Number of Antimalarials for Which Patients Did Not Have Any Information on How to Take the Medicines

District	Urban	Rural	All
RT	5	5	10
TB	13	12	25
Both	18	17	35

In Touba, a slightly higher proportion (25/43) responded that they "did not know" to at least one of these questions (Table 45), including 14 where the patients in this district said that they "did not know" in response to all three questions.

The patients reported that they received information on how to take the antimalarials prescribed from the prescriber, the dispenser, or both. For 16 of the 73 antimalarials prescribed, the prescriber alone provided information on how to take the medicine; for 15 of 73 both the

prescriber and dispenser provided the information. For 26 of the 73 prescriptions, the dispenser alone was reported to have provided the information required (Table 46).

Table 46. Patients' Reported Source of Information on How to Take the Antimalarials Prescribed

Source	RT District		TB District		Total
	Urban	Rural	Urban	Rural	
Prescriber in the clinic	5	2	4	5	16
Dispenser in the clinic	2	10	8	6	26
Prescriber and dispenser	10	0	0	5	15
Prescriber and do not know how to take the medicine	1	0	0	0	1
No one and do not know how to take the medicine	3	0	1	0	4
Do not know how to take the medicine	1	2	5	3	11
Total	22	14	18	19	73

As discussed earlier, most of the patients received prescriptions for SP and AQ. However, when asked, only 3 of the 49 patients reported that they had heard of using this SP and AQ combination to treat malaria (Table 47).

Table 47. Proportion of Patients Who Reported That They Had Heard of the SP/AQ Combination

District	Urban	Rural	All
RT	0/12	1/9	1/21
TB	1/15	1/13	2/28
Both	1/27	2/22	3/49

SUMMARY OF KEY FINDINGS AND IMPLICATIONS FOR THE IMPLEMENTATION OF THE ACT TREATMENT POLICY

General Comments on the Implementation of the SP/AQ Policy

Summary of Key Findings

The implementation of the SP/AQ policy in Richard Toll and Touba Districts showed mixed results over the 12-month period beginning April 2003. However, by May 2004, 60 percent of the prescriptions issued for uncomplicated malaria were for the SP/AQ combination.

One of the main challenges in implementing the policy was the lack of a formal implementation plan for the policy in the two districts, including how it was to have been phased in, as demonstrated by the confusion of the key decision makers and health providers interviewed when they were asked when the policy was changed and when the implementation of the policy in their health facilities occurred.

Implications for the Implementation of the ACT Treatment Policy

- When the ACT has been selected, an implementation plan needs to be developed for the ACT policy that incorporates the components listed in Figure 1, which include guidelines and timelines for phasing in the policy in each region.

- All the key decision makers in the regions and the districts need to be informed of this implementation plan because they are ultimately responsible for the implementation of policy in their respective regions and districts.

Are SP and AQ Available Consistently and in Sufficient Quantities?

Problems with the availability of medicines may result from problems with the quantification, procurement, distribution, or inventory management practices (or a combination of these) at the different levels of the health system. Because this assessment did not directly assess the quality of the procurement or distribution strategies used, it not possible to make any inferences about their effect on any of the availability problems identified.

Summary of Key Findings

Keeping of inventory management records was very poor, and it is not clear what data were being used to conduct the quantification of antimalarials to be ordered at each of these facilities.

Management of the stock of CQ—

- With the change in policy to SP/AQ, a plan to phase out CQ stocks was required. It is not apparent if such a plan existed. CQ was still widely available in many of the health facilities despite the decrease in use of this medicine. Some of the facilities had large

quantities of CQ in stock at the time of the assessment, and the poor inventory management practices meant that it was difficult to ascertain whether any of the stocks had expired.

Management of supply of SP and AQ for use in new treatment policy—

- The availability of SP and AQ, as seen from the retrospective analysis of the stock-out data, was one of the main determinants of whether or not most providers prescribed or dispensed the SP/AQ combination. SP and AQ have been consistently available in most of the health facilities surveyed in Richard Toll District only since March 2004. The medicines have been available fairly regularly in Touba District since October 2003, with limited stock-outs of one or the other since then. Both these dates are several months after the policy change occurred. A concrete plan did not appear to exist for the phase-in of the SP/AQ combination at the health facilities.

- The physical inventory showed that most of the health facilities had adequate quantities of SP and AQ at the time of the assessment to meet the needs of the patients who presented at the health facilities at that time. But in the absence of adequate records, it was difficult to ascertain how long these stocks would last before they were used up or expired.

- SP is also used for Intermittent Preventive Treatment (IPT), but it is not clear from the available data and records whether a system existed to separate the needs for SP for IPT from the need for SP as part of the SP/AQ combination.

- The cost of a complete adult dose of SP/AQ was almost six times the cost of CQ, although most of the prescriptions issued for antimalarials were filled at the health facilities, suggesting that this price differential was not a factor in the purchasing decisions of the patients who came to the health facility.

Implications for the Implementation of the ACT Treatment Policy

Management of the stock of the antimalarials currently in use (CQ, SP, AQ)—

- A plan needs to be developed for withdrawing the CQ stocks from the peripheral health facilities and the district stores. This plan should be accompanied by a plan for the disposal of the CQ at central stores as well.

- It is presumed that SP will still be used for IPT, although this use will likely require fewer quantities than are currently required for the treatment of malaria cases. Improved quantification and inventory management skills may be required to prevent any losses resulting from the reduction in use of the SP.

- AQ is one of the drugs under consideration as part of the ACT combination. Its management will depend on what policy is ultimately adopted. If AQ is not part of the combination, then a phase-out plan would need to be developed.

Management of supply of ACTs for use in new treatment policy—

- With the anticipated change in the national malaria policy, it will be important to develop a plan for phasing in the new ACT combination in the health facilities.

- The inventory management practices at the health facilities, including record keeping, quantification, and ordering practices, need to be improved. This improvement is particularly important to prevent losses and stock-outs that may arise as a result of the higher prices and short shelf-life of the artemisinins that will be used in the new policy.

- Because some of the patients planned to fill their prescriptions in the private sector, it is important to ensure that ACTs of appropriate quality are available in the private sector.

Are Providers Prescribing and Dispensing the SP/AQ Combination Consistent with Available Treatment Guidelines?

Summary of Key Findings

Review and dissemination of the STGs and other relevant guideline documents—

- There was limited availability of the STGs in the health facilities surveyed, and there was no information on the age of the available STGs. However, the data showed a correlation between the availability of the STGs and whether or not providers were prescribing the SP/AQ combination.

- About half of the prescribers and dispensers interviewed knew that SP/AQ was the recommended treatment for uncomplicated malaria in adults. The other half either identified the incorrect medicine or did not know what the recommended treatment was.

- Most of the prescribers and dispensers interviewed did not know that SP/AQ was also the recommended treatment for uncomplicated malaria in children. Several of them, particularly the dispensers, believed that AQ suspension was the recommended treatment, and most of them were prescribing that to children with malaria.

- Most of the prescribers and dispensers incorrectly reported that the SP/AQ was not recommended for use in pregnancy.

Training and supervision of health providers on the new guidelines—

- A structured means of communicating the change in treatment policy to the providers did not appear to exist, nor did structured training programs to ensure that all the providers were aware of the policy and able to prescribe SP/AQ appropriately and in a timely manner. The training sessions and workshops that were held appeared to have been only for doctors at the hospital level and did not include most of the health care workers in the health centers and health posts.

- Despite the poor communication strategy, the majority of providers in the two districts were prescribing or dispensing the SP/AQ combination to adult patients with uncomplicated malaria at the time of the assessment. The trends in the uptake of the SP/AQ policy showed that at least in one district, uptake appeared to be related to the availability of the combination in the health facilities.

- Few of the providers were prescribing the SP/AQ combination to children under five years of age with uncomplicated malaria, and most appeared to prefer to prescribe suspensions to children as opposed to tablets.

- Most of the health care providers had some concerns or questions with respect to the use of the SP/AQ combination.

- CQ was still being prescribed to some of the patients in health facilities at the time of the assessment, which was approximately one year after the official change in the national malaria treatment policy.

Implications for the Implementation of the ACT Treatment Policy

- A structured plan will need to developed and implemented for the review of the STGs and other guidance documents as well as the dissemination of the new policy and these documents to the health providers and facilities.

- The training of health providers is important in ensuring compliance, and it will be even more important with the introduction of the ACTs because they will represent a completely new medicine for most of the providers. In addition, ACTs are currently available only in tablet form, thus potentially presenting a problem for providers who are not familiar with prescribing tablets to children with malaria.

- This training should be timed to coincide with the availability of the new medicines at the health facilities.

- Because SP/AQ is still the recommended treatment, it may be necessary to provide additional training or guidance to the health providers to clear up the confusion and address the concerns and questions most of them have with respect to the use of the combination, particularly in children and in pregnant women.

Is Adequate Information and Counseling Given to the Patients on the Use of the SP/AQ Combination?

Summary of Key Findings

- Most of the prescribers and dispensers fully explained to the patients how to use the medicines, although few of them asked the patients to repeat the instructions and almost none of the providers asked the patients if they had any additional questions. Therefore, no feedback was obtained from the patients on whether they had understood the instructions.

- None of the providers discussed any potential adverse effects of the medicines they prescribed or dispensed with the patient, although several had reported that adverse effects were one of their main concerns with respect to the use of the SP/AQ combination.

- Almost none of the providers told the patients what to do if their condition did not improve after using the medicines prescribed or dispensed.

- Most of the patients interviewed did not know the name of the antimalarial they had been prescribed nor what condition the antimalarial treated. Most of the patients reported that they had not heard of the SP/AQ combination despite the fact that most of them had been prescribed that combination. However, most of the patients appeared to know how to take the medicines prescribed.

- Most of the medicines were repackaged and were dispensed in loose plastic bags. Very few of the medicines dispensed were appropriately labeled—that is, included the medicine name, how to take the medicine, and the duration of treatment

- Community awareness of the recommended treatment for malaria is low.

Implications for the Implementation of the ACT Treatment Policy

- Training of the providers should include a review of the communication strategies with patients to improve the quality of the counseling provided. Communication will be particularly important given the lack of familiarity with the ACTs that is likely to be the case for most providers and members of the community.

- Training should be carried out shortly before the new antimalarials become available. Carrying it out too early may lead to providers' forgetting the key messages. Training too long after the antimalarial is available may promote irrational prescribing.

- It will be necessary to develop information, communication, and education strategies to increase community awareness of the new treatment.

- It may be necessary to use prepackaged medicines or prelabeled packages to dispense the antimalarial combinations to improve on the labeling and packaging practices and to improve patient comprehension and adherence to treatment.

ANNEX 1. DATA COLLECTORS

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ANNEX 2. ANTIMALARIALS TRACER LIST

Sulfadoxine-pyrimethamine (SP) 500 mg/25 mg tablet
Amodiaquine 200 mg tablet
Amodiaquine oral suspension
Chloroquine 150 mg tablet
Chloroquine syrup 50 mg/5 ml (10 mg/ml)
Quinine 200 mg injectable
Quinine 400 mg injectable
Quinine 600 mg injectable